As filed with the Securities and Exchange Commission on April 29, 2022

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 20-F

☐ **REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR 12(g) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2021

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☐ **SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Date of event requiring this shell company report:_____

For the transition period from _____ to_____

Commission File Number 0-99

PETRÓLEOS MEXICANOS
(Exact name of registrant as specified in its charter)

Mexican Petroleum	**United Mexican States**
(Translation of registrant's name into English)	**(Jurisdiction of incorporation or organization)**

Avenida Marina Nacional No. 329
Colonia Verónica Anzures
11300 Ciudad de México, México
(Address of principal executive offices)

Delia Cristina Arista Hernández
(5255) 9126-2940
ri@pemex.com
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 38 Colonia Verónica Anzures
11300 Ciudad de México, México
(Name, telephone, e-mail and/or facsimile number and address of company contact person)

Securities registered or to be registered pursuant to Section 12(b) of the Act. None

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
None	**N/A**	**N/A**

Securities registered or to be registered pursuant to Section 12(g) of the Act. None
Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.

Title of Each Class	
5.375% Notes due 2022	**4.875% Notes due 2022**
8.625% Bonds due 2022	**Floating Rate Notes due 2022**
4.625% Notes due 2023	**3.500% Notes due 2023**
4.875% Notes due 2024	**8.625% Guaranteed Bonds due 2023**
6.875% Notes due 2025	**4.250% Notes due 2025**
4.500% Notes due 2026	**6.875% Notes due 2026**
6.490% Notes due 2027	**5.350% Notes due 2028**
9.500% Guaranteed Bonds due 2027	**6.840% Notes due 2030**
6.500% Notes due 2027	**6.700% Notes due 2032**
6.500% Notes due 2029	**6.625% Guaranteed Bonds due 2035**
5.950% Notes due 2031	**6.500% Bonds due 2041**
6.625% Guaranteed Bonds due 2038	**6.375% Bonds due 2045**
5.500% Bonds due 2044	**5.625% Bonds due 2046**
6.750% Bonds due 2047	**6.350% Bonds due 2048**
7.690% Bonds due 2050	**6.950% Bonds due 2060**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes ☐ No ☒

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.

Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See definitions of "large accelerated filer," "accelerated filer," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Emerging growth company ☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

†The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

Yes ☐ No ☒

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP ☐ IFRS as issued by the IASB ☒ Other ☐

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow.

Item 17 ☐ Item 18 ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes ☐ No ☒

TABLE OF CONTENTS

Item 1.	Identity of Directors, Senior Management and Advisers	5
Item 2.	Offer Statistics and Expected Timetable	5
Item 3.	Key Information	5
Item 4.	Information on the Company	16
Item 4A.	Unresolved Staff Comments	97
Item 5.	Operating and Financial Review and Prospects	97
Item 6.	Directors, Senior Management and Employees	120
Item 7.	Major Shareholders and Related Party Transactions	137
Item 8.	Financial Information Consolidated Statements and Other Financial Information	138
Item 9.	The Offer and Listing	141
Item 10.	Additional Information	141
Item 11.	Quantitative and Qualitative Disclosures About Market Risk	147
Item 12.	Description of Securities Other than Equity Securities	158
Item 13.	Defaults, Dividend Arrearages and Delinquencies	158
Item 14.	Material Modifications to the Rights of Security Holders and Use of Proceeds	158
Item 15.	Controls and Procedures	158
Item 16A.	Audit Committee Financial Expert	160
Item 16B.	Code of Ethics	160
Item 16C.	Principal Accountant Fees and Services	161
Item 16D.	Exemptions from the Listing Standards for Audit Committees	162
Item 16E.	Purchases of Equity Securities by the Issuer and Affiliated Purchasers	162
Item 16F.	Change in Registrant's Certifying Accountant	162
Item 16G.	Corporate Governance	162
Item 16H.	Mine Safety Disclosure	162
Item 17.	Financial Statements	162
Item 18.	Financial Statements	162
Item 19.	Exhibits	162

EXPLANATORY NOTE

Petróleos Mexicanos and its three subsidiary entities, which we refer to as the subsidiary entities, *Pemex Exploración y Producción* (Pemex Exploration and Production), *Pemex Transformación Industrial* (Pemex Industrial Transformation) and *Pemex Logística* (Pemex Logistics), comprise the state oil and gas company of the United Mexican States, which we refer to as Mexico. Petróleos Mexicanos is a productive state-owned company of the Federal Government of Mexico, which we refer to as the Mexican Government, and each of the subsidiary entities is a productive state-owned subsidiary of Mexico. Each of Petróleos Mexicanos and the subsidiary entities is a legal entity empowered to own property and carry on business in its own name. In addition, a number of subsidiary companies that are defined in Note 3 and listed in Note 5 to our consolidated financial statements incorporated in Item 18, which we refer to as our subsidiary companies, are incorporated into the consolidated financial statements; these subsidiary companies are also identified with their corresponding ownership percentages in "—Consolidated Structure of PEMEX" on page 3. Petróleos Mexicanos, the subsidiary entities and the subsidiary companies are collectively referred to as "PEMEX" or "we." See "Item 4—Information on the Company—History and Development—Corporate Structure" for more details.

References herein to "U.S. $," "$," "U.S. dollars" or "dollars" are to United States dollars. References herein to "pesos" or "Ps." are to the legal currency of Mexico. References herein to "euros" or "€" are to the legal currency of the European Economic and Monetary Union. References herein to "pounds sterling" or "£" are to the legal currency of the United Kingdom. References herein to "Swiss francs" are to the legal currency of the Swiss Confederation. References herein to "Japanese yen" or "¥" are to the legal currency of Japan. References herein to "Australian dollars" are to the legal currency of Australia. The term "billion" as used herein means one thousand million. Amounts in this annual report are rounded, and the totals may therefore not precisely equal the sum of the numbers presented.

Our consolidated financial statements included in this annual report were prepared in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board. We refer in this report to "International Financial Reporting Standards as issued by the International Accounting Standards Board" as IFRS. In addition, these consolidated financial statements were audited in accordance with the International Standards on Auditing, as required by the *Ley del Mercado de Valores* (Securities Market Law) and the *Disposiciones de carácter general aplicables a las emisoras de valores y a otros participantes del mercado de valores* (General Provisions applicable to issuers of securities and other participants in the securities market) in each case, of Mexico, for purposes of filing with the *Comisión Nacional Bancaria y de Valores* (National Banking and Securities Commission, or the CNBV) and the *Bolsa Mexicana de Valores, S.A.B. de C.V.* (Mexican Stock Exchange), and in accordance with the standards of the Public Company Accounting Oversight Board (United States), or PCAOB, for purposes of filings with the U.S. Securities and Exchange Commission, or the SEC.

The regulations of the SEC do not require foreign private issuers that prepare their financial statements on the basis of IFRS to reconcile such financial statements to United States Generally Accepted Accounting Principles, which we refer to as U.S. GAAP. Accordingly, while we have in the past reconciled our consolidated financial statements prepared in accordance with *Normas de Información Financiera Mexicanas* (Mexican Financial Reporting Standards) to U.S. GAAP, those reconciliations are no longer presented in our filings with the SEC. We do, however, continue to provide the disclosure required under the U.S. Financial Accounting Standards Board Accounting Standards Codification (ASC) Topic 932 "Extractive Activities—Oil and Gas" (which we refer to as ASC Topic 932), as this is required regardless of the basis of accounting on which we prepare our consolidated financial statements.

We maintain our consolidated financial statements and accounting records in pesos. Unless otherwise indicated, we have translated all peso amounts to U.S. dollars in this Form 20-F, including all convenience translations of our consolidated financial statements included herein, at an exchange rate of Ps. 20.5835 = U.S. $1.00, which is the exchange rate that the *Secretaría de Hacienda y Crédito Público* (Ministry of Finance and Public Credit) instructed us to use on December 31, 2021. You should not construe these translations from pesos into dollars as actually representing such U.S. dollar amounts or meaning that you could convert such amounts into U.S. dollars at the rates indicated. Mexico has a free market for foreign exchange, and the Mexican Government allows the peso to float freely against the U.S. dollar. There can be no assurance that the Mexican Government will maintain its current policies with regard to the peso or that the peso will not depreciate or appreciate significantly in the future. Due to the volatility of the peso/U.S. dollar exchange rate, the exchange rate on any date subsequent to the date hereof could be materially different from the rate indicated above.

PRESENTATION OF INFORMATION CONCERNING RESERVES

The proved hydrocarbon reserves included in this report for the year ended December 31, 2021, are those that we have the right to extract and sell based on assignments granted to us by the Mexican Government.

The estimates of our proved reserves of crude oil and natural gas for the five years ended December 31, 2021 included in this report have been calculated according to the technical definitions required by the SEC. DeGolyer and MacNaughton Corp. (which we refer to as DeGolyer and MacNaughton), GLJ Ltd. (which we refer to as GLJ), Ryder Scott Company L.P. (which we refer to as Ryder Scott) and Sproule International Limited and Sproule México, S.A. de C.V. (which we refer to as Sproule) conducted reserves audits of our estimates of our proved hydrocarbon reserves as of December 31, 2021 or January 1, 2022, as applicable. All reserves estimates involve some degree of uncertainty. For a description of the risks relating to reserves and reserves estimates, see "Item 3—Key Information—Risk Factors—Risk Factors Related to our Relationship with the Mexican Government—Information on Mexico's hydrocarbon reserves is based on estimates, which are uncertain and subject to revisions," "—We must make significant capital expenditures to maintain our current production levels, and to maintain, as well as increase, the proved hydrocarbon reserves assigned to us by the Mexican Government. Reductions in our income, adjustments to our capital expenditures budget and our inability to obtain financing may limit our ability to make capital investments" and "—The Mexican nation, not us, owns the hydrocarbon reserves located in Mexico and our right to continue to extract these reserves is subject to the approval of the *Secretaría de Energía* (Ministry of Energy or SENER)."

FORWARD-LOOKING STATEMENTS

This Form 20-F contains words, such as "believe," "expect," "anticipate" and similar expressions that identify forward-looking statements, which reflect our views about future events and financial performance. We have made forward-looking statements that address, among other things, our:

- exploration and production activities, including drilling;
- activities relating to import, export, refining, transportation, storage and distribution of petrochemicals, petroleum, natural gas and oil products;
- activities relating to our lines of business;
- projected and targeted capital expenditures and other costs;
- trends in international and Mexican crude oil and natural gas prices;
- liquidity and sources of funding, including our ability to continue operating as a going concern;
- farm-outs, joint ventures and strategic alliances with other companies; and
- the monetization of certain of our assets.

Actual results could differ materially from those projected in such forward-looking statements as a result of various factors that may be beyond our control. These factors include, but are not limited to:

- general economic and business conditions, including changes in international and Mexican crude oil and natural gas prices, refining margins and prevailing exchange rates;
- credit ratings and limitations on our access to sources of financing on competitive terms;
- our ability to find, acquire or gain access to additional reserves and to develop, either on our own or with our strategic partners, the reserves that we obtain successfully;
- the level of financial and other support we receive from the Mexican Government;
- global or national health concerns, including the outbreak of pandemic or contagious disease, such as the ongoing COVID-19 pandemic;
- the outbreak of military hostilities, including escalating tensions between Russia and Ukraine and the potential destabilizing effect of such conflict;
- effects on us from competition, including on our ability to hire and retain skilled personnel;
- uncertainties inherent in making estimates of oil and gas reserves, including recently discovered oil and gas reserves;
- technical difficulties;

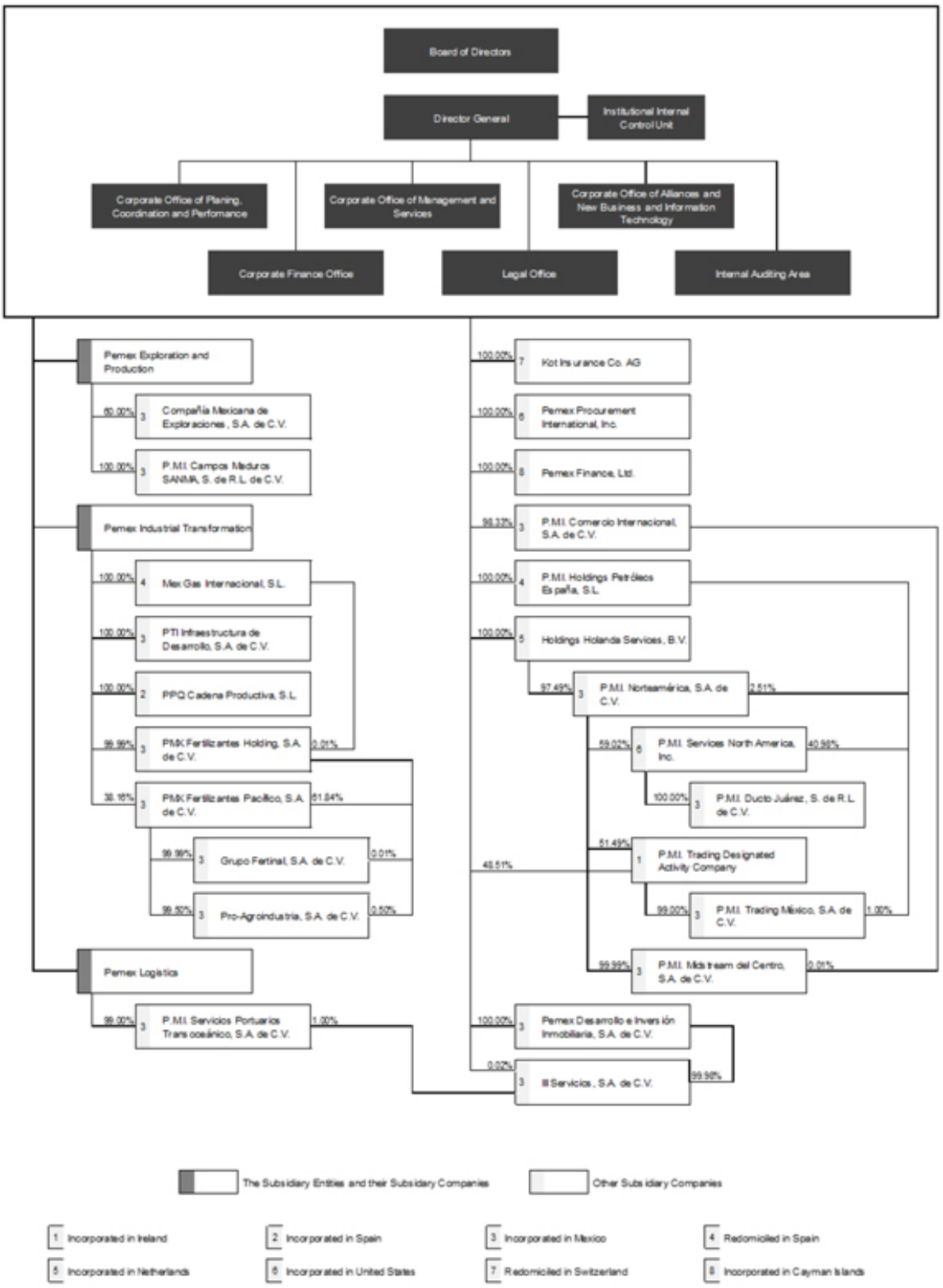
- significant developments in the global economy;
- significant economic or political developments in Mexico and the United States;
- developments affecting the energy sector;
- changes in, or failure to comply with, our legal regime or regulatory environment, including with respect to tax, environmental regulations, fraudulent activity, corruption and bribery;
- receipt of governmental approvals, permits and licenses;
- natural disasters, accidents, blockades and acts of sabotage or terrorism;
- the cost and availability of adequate insurance coverage; and
- the effectiveness of our risk management policies and procedures.

Accordingly, you should not place undue reliance on these forward-looking statements. In any event, these statements speak only as of their dates, and we undertake no obligation to update or revise any of them, whether as a result of new information, future events or otherwise.

For a discussion of important factors that could cause actual results to differ materially from those contained in any forward-looking statement, see “Item 3—Key Information—Risk Factors.”

CONSOLIDATED STRUCTURE OF PEMEX

The following chart presents the consolidated structure of PEMEX as of December 31, 2021.



PART I

Item 1. Identity of Directors, Senior Management and Advisers

Not applicable.

Item 2. Offer Statistics and Expected Timetable

Not applicable.

Item 3. Key Information

A. Selected Financial Data

Not applicable.

B. Capitalization and Indebtedness

Not applicable.

C. Reasons for the Offer and Use of Proceeds

Not applicable.

D. Risk Factors

Risk Factors

Risk Factors Related to Our Operations

We have a substantial amount of indebtedness and other liabilities and are exposed to liquidity constraints, which could make it difficult for us to obtain financing on favorable terms and could adversely affect our financial condition, results of operations and ability to repay our debt and, ultimately, our ability to operate as a going concern without additional support from the Mexican Government.

We have a substantial amount of debt, which we have incurred primarily to finance the capital expenditures needed to carry out our capital investment projects. Due to our heavy tax burden, our cash flow from operations in recent years has not been sufficient to fund our capital expenditures and other expenses and, accordingly, showed a significant increase in our indebtedness, as well as a decrease in our working capital. Therefore, in order to develop our assigned hydrocarbon reserves, service our indebtedness and amortize scheduled debt maturities, we will need to obtain funds from a broad range of sources, in addition to continuing efficiency and cost-cutting initiatives. There can be no assurances that we will continue to have access to capital on favorable terms or any terms at all. During 2021, we received support from the Mexican Government for debt repayments, and such additional support may not be available in upcoming years.

As of December 31, 2021, our total indebtedness, including accrued interest, was Ps. 2,249.7 billion (U.S. $109.3 billion), in nominal terms, which represented a 0.4% decrease in peso terms compared to our total indebtedness, including accrued interest, of Ps. 2,258.7 billion (U.S. $109.7 billion) as of December 31, 2020. As of December 31, 2021, 36.8% of our existing debt, or Ps. 827.4 billion (U.S. $40.2 billion), including accrued interest, is scheduled to mature in the next three years, including Ps. 492.3 billion (U.S. $23.9 billion) scheduled to mature in 2022. Our working capital deteriorated from a negative working capital of Ps. 442.6 billion (U.S. $21.5 billion) as of December 31, 2020 to a negative working capital of Ps. 464.3 billion (U.S. $22.6 billion) as of December 31, 2021. Our level of debt may increase further in the short or medium term as a result of new financing activities or future depreciation of the peso as compared to the U.S. dollar, and may have an adverse effect on our financial condition, results of operations and liquidity position. To service our debt, we have relied and may continue to rely on a combination of cash flows from our operations, drawdowns under our available credit facilities, capital contributions from the Mexican Government and the incurrence of additional indebtedness (including refinancing of existing indebtedness). During 2021, we received Ps. 202.6 billion from the Mexican government in the form of equity contributions to support our debt repayments. These contributions represented one of the main sources for the payment of our debt during 2021. In addition, we are taking actions to improve our financial position. See “Item 5—Operating and Financial Review and Prospects—Liquidity and Capital Resources—Overview—Changes to Our Business Plan” for more information.

If we were unable to obtain financing on favorable terms or any terms at all, this could hamper our ability to invest in projects financed through debt and meet our principal and interest payment obligations with our creditors. This risk would be further magnified if we also were unable to receive additional support from the Mexican government. As a result, we may be exposed to liquidity constraints and may not be able to service our debt or make the capital expenditures required to maintain our current production levels and to maintain, and increase, the proved hydrocarbon reserves assigned to us by the Mexican Government, which may adversely affect our financial condition and results of operations. See "—Risk Factors Related to our Relationship with the Mexican Government—We must make significant capital expenditures to maintain our current production levels, and to maintain, as well as increase, the proved hydrocarbon reserves assigned to us by the Mexican Government. Reductions in our income, adjustments to our capital expenditures budget and our inability to obtain financing may limit our ability to make capital investments" below.

If such constraints occur at a time when our cash flow from operations is less than the resources necessary to meet our debt service obligations, in order to provide additional liquidity to our operations, we could be forced to further reduce our planned capital expenditures and implement further austerity measures. A reduction in our capital expenditure program could adversely affect our financial condition and results of operations. Additionally, such measures may not be sufficient to permit us to meet our obligations.

Our consolidated financial statements have been prepared on the assumption that we will continue as a going concern.

Our consolidated financial statements have been prepared under the assumption that we will continue as a going concern. However, there is material uncertainty that raises significant doubt about our ability to continue operating as a going concern. Our consolidated financial statements do not include any adjustments that might result from the outcome of that uncertainty. If the actions we are taking to improve our financial condition, which are described in detail under "Item 5—Operating and Financial Review and Prospects—Liquidity and Capital Resources—Overview—Changes to Our Business Plan" are not successful, we may not be able to continue operating as a going concern.

Downgrades in our credit ratings could negatively impact our access to the financial markets and cost of financing.

We rely on access to the financial markets to fund our operations and finance the capital expenditures needed to carry out our capital investment projects. Accordingly, credit ratings are important to our business and financial condition, as credit ratings affect the cost and other terms upon which we are able to obtain funding.

Ratings address our creditworthiness and the likelihood of timely payment of our long-term debt securities. Ratings are not a recommendation to purchase, hold or sell securities and may be changed, suspended or withdrawn at any time. Our current ratings and the rating outlooks depend, in part, on economic conditions and other factors that affect credit risk and are outside our control, as well as assessments of the creditworthiness of Mexico.

In July 2021, Moody's downgraded our credit rating. Moody's conclusion was largely based on our high debt maturities and our lower operating cash flow derived from the expansion of our refining business, which has generated operating losses in the last several years. Both trends could lead to increased liquidity and business risk. See "Item 5—Liquidity and Capital Resources—Overview" below for some of the concerns expressed by certain ratings agencies.

We currently have a "split rating" among the three agencies that formally rate our credit profile. Two of them have assigned us a non-investment grade rating and one has assigned us an investment grade rating. For information regarding our current credit ratings, please see "Item 5—Liquidity and Capital Resources—Overview." While these downgrades do not constitute a default or event of default under our debt instruments, they have increased our cost of financing. Any further lowering of our credit ratings may have material adverse consequences on our ability to access the financial markets and the terms on which we may obtain financing, including our cost of financing. In turn, this could significantly harm our ability to meet our existing obligations, financial condition and results of operations. In addition, in connection with the entry into new financings or amendments to existing financing arrangements, our financial and operational flexibility may be reduced as a result of more restrictive covenants, requirements for security and other terms that may be imposed on split-rated entities. Our split rating and any further credit rating downgrades could also negatively impact the prices of our debt securities and reduce our potential pool of investors and funding sources, among other consequences. There can be no assurance that we will be able to maintain or improve our current credit ratings or outlook.

Crude oil, natural gas and petroleum products prices are volatile, and low crude oil and natural gas prices adversely affect our income and cash flows and the value of hydrocarbon reserves that we have the right to extract and sell.

International crude oil and natural gas prices are subject to global supply and demand and fluctuate due to many factors beyond our control. These factors include the following: competition within the oil and natural gas industry, the prices and availability of alternative sources of energy, international economic trends, exchange rate fluctuations, expectations of inflation, domestic and foreign laws and government regulations, political and other events in major oil and natural gas producing and consuming nations and

actions taken by Organization of the Petroleum Exporting Countries (OPEC) members and other oil exporting countries, trading activity in oil and natural gas and transactions in derivative financial instruments ("DFIs") related to oil and gas.

When international crude oil, petroleum product and/or natural gas prices are low, we generally earn less revenue and, therefore, generate lower cash flows and earn less income before taxes and duties because our costs remain roughly constant. Conversely, when crude oil, petroleum product and natural gas prices are high, we earn more revenue and our income before taxes and duties increases.

Beginning in early March of 2020, the market experienced a precipitous decline in oil prices. This decline occurred in response to a substantial decline in demand for oil due to the economic impact of the COVID-19 pandemic, which caused an oversupply and in turn insufficient global storage capacity. On April 20, 2020, the Mexican crude oil export price reached an unprecedented low of negative U.S. $2.37 per barrel, and averaged U.S. $35.47 per barrel in 2020, as compared to an average of U.S. $55.53 per barrel in 2019. During 2021, the average crude oil export price has recovered as compared to 2020. During 2021, the average crude oil export price was U.S. $65.86 per barrel, an increase of U.S. $30.04 per barrel as compared to the 2020 weighted average Mexican crude oil export price. As of December 31, 2021 the weighted average Mexican crude oil export price was U.S. $71.29 per barrel. As of April 22, 2022, the weighted average Mexican crude oil export price was U.S. $100.21 per barrel. Any future decline in international crude oil and natural gas prices will have a similar negative impact on our results of operations and financial condition. These fluctuations may also affect estimates of the amount of Mexico's hydrocarbon reserves that we have the right to extract and sell, which could affect our future production levels. See "—Risk Factors Related to our Relationship with the Mexican Government—Information on Mexico's hydrocarbon reserves is based on estimates, which are uncertain and subject to revisions" below and "Item 11—Quantitative and Qualitative Disclosures About Market Risk—Changes in Exposure to Main Risks—Market Risk—Hydrocarbon Price Risk."

Any further or future production cuts or declines in international crude oil and natural gas prices will likely have a negative impact on our results of operations and financial condition. In addition, significant fluctuations may affect estimates of the amount of Mexico's hydrocarbon reserves that we have the right to extract and sell, which could affect our future production levels. See "—Risk Factors Related to our Relationship with the Mexican Government—Information on Mexico's hydrocarbon reserves is based on estimates, which are uncertain and subject to revisions" below and "Item 11—Quantitative and Qualitative Disclosures About Market Risk—Changes in Exposure to Main Risks—Market Risk—Hydrocarbon Price Risk."

The COVID-19 pandemic has had and may continue to have an adverse effect on our business, results of operations and financial condition.

On March 11, 2020, COVID-19 was categorized as a pandemic by the World Health Organization. Many countries around the world, including Mexico, continue to suffer significant economic and social crises as a result of the ongoing COVID-19 pandemic and measures taken to contain or mitigate it, which have had dramatic adverse consequences on demand, operations, supply chains and financial markets, as well as contributed to significant oil price volatility. While the nature and scope of the consequences to date are difficult to evaluate precisely, and their future course is impossible to predict with confidence, these events may continue for a sustained period of time.

As of the date of this report, the Mexican Government has continued to adopt measures intended to mitigate the spread of COVID-19 in Mexico. However, we cannot predict the future policies that may be enacted by the Mexican Government, or any other government, or the impact these policies will have on our business and operations. Our business operation is generally considered a strategic area as defined in Articles 27 and 28 of the *Constitución Política de los Estados Unidos Mexicanos* (Political Constitution of the United Mexican States or the Mexican Constitution). Therefore, all of our operations remain active as of the date of this annual report. However, in accordance with our business continuity plan, we have limited our workforce's access to our facilities, for which we implemented alternating shifts and allowed a portion of our workforce to continue to work remotely. In addition, we have implemented sanitizing measures to disinfect our facilities, as well as the use of thermal cameras and other special equipment to monitor infection risks. Despite these precautions, as of April 19, 2022, 35,993 of our employees have been confirmed as having contracted COVID-19, of which 31,866 have recovered and over 13 are current active cases. Regrettably, 670 of our active employees, 2,001 retired employees, 1,426 relatives of our employees and 17 contractors are confirmed to have passed away as a result of COVID-19. The COVID-19 pandemic, or any future pandemic or epidemic, may further impact the places where we operate or cause health issues for our workforce. In turn, this could significantly affect the operation of our facilities, including our platforms, refineries and terminals, among others. These conditions may adversely affect our business, results of operations and financial condition.

In addition to the operational impacts of the COVID-19 pandemic, international prices for oil, oil products and natural gas are volatile and strongly influenced by conditions and expectations of world supply and demand. The COVID-19 pandemic led to significantly decreased oil prices, particularly in 2020, and, consequently, significantly adversely affected our business, results of operations and financial condition. During 2021, those prices have recovered, largely due to geopolitical events unrelated to COVID-

19, reducing possible adverse effects on our results of operation and financial situation. See "—Risk Factors Related to Our Operations—Crude oil, natural gas and petroleum product prices are volatile and low crude oil and natural gas prices adversely affect our income and cash flows and the amount of hydrocarbon reserves that we have the right to extract and sell" above and "Item 5—Overview" below for further information about the COVID-19 pandemic's impact on us.

The COVID-19 pandemic could adversely affect our ability to operate our business in the manner and on the timelines previously planned. The extent to which COVID-19 or other health pandemics or epidemics may continue to impact Mexico, the Mexican economy and the global economy and, in turn, our business, results of operations and financial condition is highly uncertain and will depend on numerous evolving factors that we cannot predict, including, but not limited to:

- the duration, scope, and severity of the COVID-19 pandemic;
- volatility in oil demand and oil prices;
- the impact of travel bans, work-from-home policies, or shelter-in-place orders;
- staffing shortages;
- interest rate and inflation rate volatility;
- general economic, financial, and industry conditions, particularly relating to liquidity, financial performance, which may be amplified by the effects of COVID-19; and
- the long-term effects of the pandemic on the national and global economy, including on global supply chains, consumer confidence and spending, financial markets and the availability of credit for us, our suppliers and our customers, among others.

Our business could be negatively impacted by hydrocarbon price volatility as the result of, or as a result of the threat of, Russian activities in Ukraine and the related destabilization of the world energy markets.

Our revenues and our profitability are heavily dependent on the prices we receive from our sales of oil and natural gas. Oil prices are particularly sensitive to actual and perceived threats to global political stability and to changes in production from OPEC member states. An actual increase, or the threat of an increase, in Russian activities in Ukraine could lead to increased volatility in global oil and gas prices. Destabilization of global oil and gas prices could reduce the price we receive from our sales of oil and natural gas and adversely affect our profitability. Increases in oil and gas prices may not persist and could be followed by price decreases based on factors beyond our control, including geopolitical events.

We are an integrated oil and gas company and are exposed to production, equipment and transportation risks, criminal acts, blockades to our facilities and deliberate acts of terror that could adversely affect our business, results of operations and financial condition.

We are subject to several risks that are common among oil and gas companies. These risks include production risks (fluctuations in production due to operational hazards, effects of natural disasters or weather, accidents at our facilities, etc.), equipment risks (relating to the adequacy, condition and maintenance of our facilities and equipment) and transportation risks (relating to the condition and vulnerability of pipelines and other modes of transportation). More specifically, our business is subject to the risks of explosions in pipelines, refineries, plants, drilling wells and other facilities, oil spills, hurricanes in the Gulf of Mexico and other natural or geological disasters and accidents, fires and mechanical failures. For further information related to environmental liabilities, see "Item 4—Information on the Company—Environmental Regulation—Environmental Liabilities."

Our operations are also subject to the risk of criminal acts to divert our crude oil, natural gas or refined products from our pipeline network, including the theft, and tampering with the quality, of our products. In recent years, we have experienced an increase in the illegal trade in the fuels that we produce and the illegal "tapping" of our pipelines, which has led to explosions, property and environmental damage, injuries and loss of life, as well as loss of revenue from the stolen product.

Since 2019, we have taken action in conjunction with the Mexican Government in an effort to reduce the illicit market of fuels. In 2021 and 2020, we discovered 11,037 and 11,022 illegal pipeline taps, respectively. We are also subject to the risk that some of our employees may, or may be perceived to, be participating in the illicit market in fuels. In addition, our facilities are subject to the risk of sabotage, terrorism and blockades. The occurrence of incidents such as these related to the production, processing and transportation of oil and gas products could result in personal injuries, loss of life, environmental damage from the subsequent containment, clean up and repair expenses, equipment damage and damage to our facilities, which in turn could adversely affect our business, results of operations and financial condition.

We are subject to the risk of cybersecurity incidents, failures and attacks that could adversely affect our business, results of operations and financial condition.

Our operations are supported by our information technology systems and therefore, cybersecurity plays a key role in protecting our operations. Cyber-threats and cyber-attacks are becoming increasingly sophisticated, coordinated and costly, and could be targeted at our operations or information systems. Accordingly, we have an information security policy, in order to help us prevent, detect and correct vulnerabilities. On November 10, 2019, we detected a ransomware cyber-attack that targeted certain computer software applications. Although the cyber-attack did not interrupt the operational continuity of our business, we implemented remedial measures in accordance with our protocols that were intended to contain the extent of the attack and preserve the integrity of our proprietary information. If the integrity of our information technology systems were to be compromised due to another cyber-attack, or, as the case may be, due to the negligence or misconduct of our employees, our business operations could be disrupted or even paralyzed and our proprietary information could be lost or stolen. If such events occur, we could face, among other things, regulatory action, legal liability, damage to our reputation, a significant reduction in revenues, an increase in costs, a shutdown of operations, or loss of our investments in areas affected by such cyber-attacks, which in turn could have a material adverse effect on our reputation, results of operations and financial condition.

A continued decline in our proved hydrocarbon reserves and production could adversely affect our operating results and financial condition.

Some of our existing oil and gas producing fields are mature and, as a result, our reserves and production may decline as reserves are depleted. In years prior to 2019, the replacement rate for our proved hydrocarbon reserves was insufficient to prevent a decline in our proved reserves. However, during 2019, the trend of previous years was reversed. We achieved a reserve-replacement ratio, or RRR, of 120.1% and 119.7% for 2019 and 2020, respectively. In 2021, our total proved reserves had a small increase of 43 million barrels of crude oil equivalent, or 0.6%, after accounting for discoveries, extensions, revisions, and delimitations, from 7,383.9 million barrels of crude oil equivalent as of December 31, 2020 to 7,426.5 million barrels of crude oil equivalent as of December 31, 2021. See "Item 4—Information on the Company—Business Overview—Exploration and Production—Reserves" for more information about the factors leading to this increase. Based on these numbers, the RRR in 2021 was 105.1%, a decrease as compared to the RRR of 119.7% in 2020. Nevertheless, as a result of the CNH's final resolution on April 20, 2021 to approve 2020 proved reserves, our proved reserves as of December 31, 2020 increased from 7,383.9 million barrels of crude oil equivalent to 7,436.5 million barrels of crude oil equivalent, due to the inclusion of final proved reserves from our *Contratos de Exploración y Extracción* (Exploration and Extraction Contracts, or "CEEs"). As a result, our RRR in 2021 was 98.8%, a decrease from our RRR of 119.7% in 2020. However, our crude oil production increased by 0.1% and 2.9% in 2020 and 2021, respectively, primarily as a result of the increase in production in our new offshore field projects Cheek, Itta, Koban, Mulach, Manik NW, Octli, Pokche, Tlacame, Tlamatini, Tetl, Xolotl, Yaxche, and onshore field projects Tupilco Profundo, Quesqui, Cibix and Ixachi. There can be no assurance, however, that we will be able to continue to increase, or otherwise stop or reverse the trend of decline in, our proved reserves and production, which at any time could have an adverse effect on our business, results of operations and financial condition.

Developments in the oil and gas industry and other factors may result in substantial write-downs of the carrying amount of certain of our assets, which could adversely affect our operating results and financial condition.

We evaluate on an annual basis, or more frequently where the circumstances require, the carrying amount of our assets for possible impairment. Our impairment tests are performed by a comparison of the carrying amount of an individual asset or a cash-generating unit with its recoverable amount. Whenever the recoverable amount of an individual asset or cash-generating unit is less than its carrying amount, an impairment loss is recognized to reduce the carrying amount to the recoverable amount.

Changes in the economic, regulatory, business or political environment in Mexico or other markets where we operate, such as the liberalization of fuel prices or a significant decline in international crude oil and gas prices, among other factors, may result in the recognition of impairment charges in certain of our assets. Due to the decline in oil prices, we have performed impairment tests of our non-financial assets (other than inventories and deferred taxes) at the end of each quarter. As of December 31, 2019, 2020 and 2021, we recognized an impairment charge in the amount of Ps. 31.3 billion, Ps. 36.4 billion and Ps. 1.2 billion, respectively. See Note 13 to our consolidated financial statements for further information about the impairment of certain of our assets. Future developments in the economic environment, in the oil and gas industry and other factors could result in further substantial impairment charges, adversely affecting our operating results and financial condition.

Increased competition in the energy sector could adversely affect our business and financial performance.

The Mexican Constitution and the *Ley de Hidrocarburos* (Hydrocarbons Law) allow other oil and gas companies, in addition to us, to carry out certain activities related to the energy sector in Mexico, including exploration and production activities, and the import and sale of gasoline. As a result, we face competition for the right to explore and develop new oil and gas reserves in Mexico. We also face competition in connection with certain refining, transportation and processing activities, as well as the distribution and sale of

gasoline and other fuels. Increased competition could make it difficult for us to hire and retain skilled personnel, especially for the sale of gasoline. If we are unable to compete successfully with other oil and gas companies in the energy sector in Mexico, our results of operations and financial condition may be adversely affected.

We are subject to Mexican and international anti-corruption, anti-bribery and anti-money laundering laws. Our failure to comply with these laws could result in penalties, which could harm our reputation and have an adverse effect on our business, results of operations and financial condition.

We are subject to Mexican and international anti-corruption, anti-bribery and anti-money laundering laws. See "Item 4—Information on the Company—General Regulatory Framework." We maintain a corporate compliance program that includes policies and processes intended to comply with these laws, such as our internal control system. Our internal control system aims to prevent risks, anticipate any weaknesses arising in our operations or internal control over financial reporting and promote information exchange and communication. However, we are subject to the risk that our management, employees, contractors or any person doing business with us may engage in fraudulent activity, corruption or bribery, circumvent or override our internal controls and procedures or misappropriate or manipulate our assets for their personal benefit or of third parties to our detriment. This risk is heightened by the fact that we have a large number of complex, valuable contracts with local and foreign third parties. Although we have systems and internal policies in place for identifying, monitoring and mitigating these risks, such systems and policies have failed in the past and may not be effective in the future. Further, we cannot ensure that these compliance policies and processes will prevent intentional, reckless or negligent acts committed by our management, employees, contractors or any person doing business with us. Any failure—real or perceived—by our management, employees, contractors or any person doing business with us to comply with applicable governance or regulatory obligations could harm our reputation, limit our ability to obtain financing and otherwise have a material adverse effect on our business, financial condition and results of operations.

If we fail to comply with any applicable anti-corruption, anti-bribery or anti-money laundering laws, we and our management, employees, contractors or any person doing business with us may be subject to criminal, administrative or civil penalties and other measures, which could have material adverse effects on our reputation, business, financial condition and results of operations. Any investigation of potential violations of anti-corruption, anti-bribery or anti-money laundering laws by governmental authorities in Mexico or other jurisdictions could result in an inability to prepare our consolidated financial statements in a timely manner and could adversely impact our reputation, ability to access financial markets and ability to obtain contracts, assignments, permits and other government authorizations necessary to participate in our industry, which, in turn, could have adverse effects on our business, results of operations and financial condition.

Our management has identified material weaknesses in our internal control over financial reporting for five of the last six years and has concluded that our internal control over financial reporting was not effective at December 31, 2021, which may have a material adverse result on our results of operation and financial condition.

Our management identified one material weakness in our internal control over financial reporting in 2021, related to the estimation of impairment of long-lived assets. For further information on the material weakness identified by our management in 2021, see "Item 15—Controls and Procedures—Management's Annual Report on Internal Control over Financial Reporting." In light of the identified material weakness, our management concluded that our internal control over financial reporting was not effective at December 31, 2021. Although we are developing and implementing several measures to remedy this material weakness, we cannot be certain that there will be no other material weaknesses in our internal control over financial reporting in the future. In addition, our management identified material weaknesses in our internal control over financial reporting in connection with the preparation of our consolidated financial statements as of and for each of the years ended December 31, 2015, 2016, 2017, 2018 and 2020. In light of the identified material weaknesses, our management concluded that our internal control over financial reporting was not effective at December 31 of each of those years. We disclosed the circumstances giving rise to these material weaknesses—which were generally different from one year to the next—in our annual reports on Form 20-F corresponding to each of those years. As of the date of this annual report, we believe that each of these material weaknesses has been remediated, except for the 2021 and 2020 material weaknesses for which we are in the process of implementing the corresponding remediation actions. For more information, see "Item 15—Controls and Procedures—Management's Annual Report on Internal Control over Financial Reporting."

If our efforts to remediate the material weaknesses identified in 2021 and 2020 are unsuccessful, we may be unable to report our results of operations for future periods accurately and in a timely manner and make our required filings with government authorities, including the SEC. We cannot be certain that additional material weaknesses will not develop or be discovered in the future. There is also a risk that there could be accounting errors in our financial reporting, and we cannot be certain that in the future additional material weaknesses will not exist or otherwise be discovered. Any of these occurrences could adversely affect our results of operation and financial condition.

Environmental regulations in Mexico, including in connection with efforts to address climate change, could result in material adverse effects on our results of operations.

A wide range of general and industry-specific Mexican federal and state environmental laws and regulations apply to our operations. These laws and regulations are often difficult and costly to comply with and carry substantial penalties for non-compliance. This regulatory burden increases our costs because it requires us to make significant capital expenditures and limits our ability to extract hydrocarbons, resulting in lower revenues. For an estimate of our accrued environmental liabilities, see "Item 4—Information on the Company—Environmental Regulation—Environmental Liabilities." Growing international concern over greenhouse gas emissions and climate change could result in new laws and regulations that could adversely affect our results of operations and financial condition. International agreements, including the Paris Agreement approved by the Mexican Government, contemplate commitments to combat climate change. We may become subject to market changes, including carbon taxes, efficiency standards, cap-and-trade and emission allowances and credits. These measures could increase our operating and maintenance costs, increase the price of our hydrocarbon products and possibly shift consumer demand to lower-carbon sources. See "Item 4—Environmental Regulation—Climate Change" for more information on the Mexican Government's current legal and regulatory framework for combatting climate change.

Also, in the event that an environmental risk materializes affecting the soil, water or air, such as those mainly related to effluent treatment, emissions of pollutants, sulfur recovery plants, disposal of hazardous waste, hazardous waste warehouses, hydrocarbon-affected sites, non-compliance with water discharge parameters, among others, we would incur additional costs for remediation and characterization of contaminated surfaces.

We participate in strategic alliances, joint ventures and other joint arrangements, which may not perform as expected, could harm our reputation and could have an adverse effect on our business, results of operations and financial condition.

We have not entered into any strategic alliances, joint ventures or other joint arrangements since 2018. However, we continue to participate in prior arrangements and currently enter into long-term service contracts for oil production (*contratos de servicios integrales de exploración y extracción*, or CSIEEs). These arrangements are intended to reduce or reallocate risks in exploration and production, refining, transportation and processing activities. Our partners in such arrangements may, as a result of financial or other difficulties, be unable or unwilling to fulfill their financial or other obligations under our agreements, threatening the viability of the relevant project. In addition, our partners may have inconsistent or opposing economic or business interests and may take action contrary to our policies or objectives, which could be to our overall detriment. If our strategic alliances, joint ventures or other joint arrangements do not perform as expected, our reputation may be harmed and our business, financial condition and results of operations could be adversely affected.

Discontinuation, reform or replacement of the London Interbank Offered Rate (or LIBOR) or other benchmark interest rates, or uncertainty related to the potential for any of the foregoing, may impact our business.

As of December 31, 2020 and 2021, we had Ps. 158.8 billion (U.S. $7.7 billion) and Ps. 199.3 billion (U.S. $9.7 billion), respectively, of variable rate indebtedness linked to LIBOR or other benchmark rates. In July 2017, the U.K. Financial Conduct Authority, which regulates LIBOR, announced its intention to phase out the use of LIBOR by the end of 2021. However, in November 2020, ICE Benchmark Administration Limited ("ICE") announced an extension of the most common dollar LIBOR rates to June 2023. Other regulators have suggested reforming or replacing other benchmark rates. However, the phase out of LIBOR and the discontinuation, reform or replacement of other benchmark rates may have an important impact on, or cause disruption to, the broader financial markets or borrowing costs to borrowers. These developments may in turn increase the cost of our variable rate indebtedness or otherwise have an adverse effect on our results of operations and financial condition.

Risk Factors Related to Mexico

Economic conditions, the impacts of the COVID-19 pandemic and government policies in Mexico and elsewhere may have a material impact on our operations.

A deterioration in Mexico's economic condition, social instability, political unrest or other adverse social developments in Mexico could adversely affect our business and financial condition. Those events could also lead to increased volatility in the foreign exchange and financial markets, thereby affecting our ability to obtain new financing on favorable terms or at all and service our debt. Additionally, the Mexican Government in November 2015, February 2016 and September 2016 announced budget cuts in response to declines in international crude oil prices. The Mexican Government announced a budget increase in each of December of 2018 and 2019. However, in 2020, given the ongoing impact of the COVID-19 pandemic on our business and the global economy, the Board of Directors of Petróleos Mexicanos authorized a decrease in our budget by Ps. 4.5 billion, offset by a net decrease in expenses of Ps. 21.0 billion, consisting of (1) a decrease in investment expenditure by Ps. 28.0 billion (including non-capitalizable maintenance), (2) an increase in operating expense of Ps. 7.0 billion and (3) an increase in financing cost of Ps. 16.5 billion. In 2021, our budget

increased by Ps. 391.7 billion. Further, the Mexican Government may reduce our budget in the future. Any new budget cuts could adversely affect the Mexican economy and, consequently, our business, financial condition, operating results and prospects. See "—Risk Factors Related to our Relationship with the Mexican Government—The Mexican Government controls us and it could limit our ability to satisfy our external debt obligations or could reorganize or transfer us or our assets" below.

In addition, many countries around the world, including Mexico, have been significantly affected in economic and social terms, as a result of the ongoing COVID-19 pandemic. Oil prices have shown significant volatility since the beginning of the pandemic. In addition to these economic effects, the COVID-19 pandemic has had adverse impacts on the places in which we operate and our workforce, and could significantly disrupt our operations in the future. Despite the recovery in oil prices in 2021, the effects of the COVID-19 pandemic or other health pandemics or epidemics may impact Mexico and the Mexican economy and, in turn, our results of operations.

In the past, Mexico has experienced several periods of slow or negative economic growth, high inflation, high interest rates, currency devaluation and other economic problems. These problems may worsen and could adversely affect our financial condition, as well as our ability to service our debt in the absence of additional support from the Mexican Government. In the case of a deterioration in international financial or economic conditions, such as a slowdown in growth or recessionary conditions in Mexico's trading partners, including the United States, or the emergence of a new financial crisis, could have adverse effects on the Mexican economy, our financial condition and our ability to service our debt, including by adversely affecting the Mexican Government's ability to support us.

Changes in Mexico's exchange control laws may hamper our ability to service our foreign currency debt.

The Mexican Government does not currently restrict the ability of Mexican companies or individuals to convert pesos into other currencies. However, we cannot provide assurances that the Mexican Government will maintain its current policies with regard to the peso. In the future, the Mexican Government could impose a restrictive exchange control policy, as it has done in the past. Mexican Government policies preventing us from exchanging pesos into U.S. dollars could hamper our ability to service our foreign currency obligations, including our debt, the majority of which is denominated in currencies other than pesos.

Mexico has experienced a period of increasing criminal activity, which could affect our operations.

In recent years, Mexico has experienced a period of increasing criminal activity, primarily due to the activities of drug cartels and related criminal organizations. In addition, the development of the illicit market in fuels in Mexico has led to increases in theft and illegal trade in the fuels that we produce. In response, the Mexican Government has implemented various security measures and has strengthened its military and police forces, and we have also established various strategic measures aimed at decreasing incidents of theft and other criminal activity directed at our facilities and products. See "Item 8—Financial Information—Legal Proceedings—Actions Against the Illicit Market in Fuels." Despite these efforts, criminal activity continues to exist in Mexico. These activities, their possible escalation and the violence associated with them, in an extreme case, may have a negative impact on our financial condition and results of operations.

Economic and political developments in Mexico and the United States may adversely affect Mexican economic policy and, in turn, our operations.

Adverse political events in Mexico may significantly affect Mexican economic policy and, consequently, our operations.

The current administration and the Mexican Congress have the power to revise the legal framework that governs us and they are currently discussing a number of reforms that could affect economic conditions of the energy sector in Mexico. Until any reform has been adopted and implemented, we cannot predict how these policies could impact our results of operations and financial position. We cannot provide any assurances that political developments in Mexico will not have an adverse effect on the Mexican economy or oil and gas industry and, in turn, our business, results of operations and financial condition, including our ability to repay our debt.

Economic conditions in Mexico are highly correlated with economic conditions in the United States due to the physical proximity and the high degree of economic activity between the two countries. As a result, political developments in the United States, including changes in the administration and governmental policies, can also have an impact on the exchange rate between the U.S. dollar and the Mexican peso, economic conditions in Mexico and the global capital markets.

Since 2003, exports of petrochemical products from Mexico to the United States have enjoyed a zero-tariff rate under the North American Free Trade Agreement ("NAFTA") and, subject to limited exceptions, exports of crude oil and petroleum products have also been free or exempt from tariffs. On November 30, 2018, the Presidents of Mexico and the United States and the Prime Minister of Canada signed the United States-Mexico-Canada Agreement, or the USMCA. The USMCA came into force on July 1, 2020,

replacing NAFTA. While the USMCA provides that exports of petrochemical products from Mexico to the United States will continue to enjoy a zero-tariff rate, any shift in the trade relationships between Mexico and the United States and Canada as a result of the implementation of the USMCA could require us to renegotiate our contracts or lose business, resulting in a material adverse impact on our business and results of operations. During 2021, our export sales to the United States amounted to Ps. 503,359 million, representing 33.7% of total sales and 69.1% of export sales for the year.

In addition, because the Mexican economy is heavily influenced by the U.S. economy, policies that may be adopted by the U.S. government that are unfavorable to Mexico may adversely affect economic conditions in Mexico and could, in turn, have an adverse effect on our financial condition, results of operations and ability to repay our debt.

Risk Factors Related to our Relationship with the Mexican Government

The Mexican Government controls us and it could limit our ability to satisfy our external debt obligations or could reorganize or transfer us or our assets.

We are controlled by the Mexican Government and our annual budget may be adjusted by the Mexican Government in certain respects. Pursuant to the Petróleos Mexicanos Law, Petróleos Mexicanos was transformed from a decentralized public entity to a productive state-owned company on October 7, 2014. The Petróleos Mexicanos Law establishes a special regime governing, among other things, our budget, debt levels, administrative liabilities, acquisitions, leases, services and public works. This special regime provides Petróleos Mexicanos with additional technical and managerial autonomy and, subject to certain restrictions, with additional autonomy with respect to our budget. Notwithstanding this increased autonomy, the Mexican Government still controls us and has the power to adjust our financial balance goal, which represents our targeted net cash flow for the fiscal year based on our projected revenues and expenses, and our annual wage and salary expenditures, subject to the approval of the Chamber of Deputies.

The adjustments to our annual budget mentioned above may compromise our ability to develop the reserves assigned to us by the Mexican Government and to successfully compete with other oil and gas companies that may enter the Mexican energy sector. See "Item 4—General Regulatory Framework," for more information about the Mexican Government's authority with respect to our budget. In addition, the Mexican Government's control over us could adversely affect our ability to make payments under any securities issued by Petróleos Mexicanos. Although we are wholly owned by the Mexican Government, our financing obligations do not constitute obligations of and are not guaranteed by the Mexican Government. See "—Risk Factors Related to our Relationship with the Mexican Government—Our financing obligations are not guaranteed by the Mexican Government."

The Mexican Government's agreements with international creditors may affect our external debt obligations. In certain past debt restructurings of the Mexican Government, Petróleos Mexicanos' external indebtedness was treated on the same terms as the debt of the Mexican Government and other public-sector entities, and it may be treated on similar terms in any future debt restructuring. In addition, Mexico has entered into agreements with official bilateral creditors to reschedule public-sector external debt. Mexico has not requested restructuring of bonds or debt owed to multilateral agencies.

The Mexican Government has the power, if the Mexican Constitution and federal law were amended, to reorganize our corporate structure, including a transfer of all or a portion of our assets to an entity not controlled, directly or indirectly, by the Mexican Government. See "—Risk Factors Related to Mexico" above.

Our financing obligations are not guaranteed by the Mexican Government.

Although Petróleos Mexicanos is wholly owned by the Mexican Government, our financing obligations do not constitute obligations of and are not guaranteed by the Mexican Government. As a result, the Mexican Government would have no legal obligation to make principal or interest payments on our debt if we were unable to satisfy our financial obligations.

The Mexican Government may cease to support our debt service obligations.

The Mexican Government has made equity contributions to us of Ps. 202.6 billion in 2021 to support our debt service obligations, and announced that it intends to make additional contributions to support our debt service obligations in 2022. Given that the Mexican Government is not obligated, legally or contractually, to make such capital contributions to us or assist us in repaying our debt, it may cease to provide such support at any time. Any change in the Mexican Government's support of our debt service obligations, including as a result of liquidity constraints, could have a material adverse effect on our financial condition and ability to repay our indebtedness, as well as on the market value of our debt securities.

We pay significant taxes and duties to the Mexican Government, and, if certain conditions are met, we may be required to pay a state dividend, which may limit our capacity to expand our investment program or negatively impact our financial condition generally.

We are required to make significant payments to the Mexican Government, including in the form of taxes and duties, which may limit our ability to make capital investments. For the year ended December 31, 2021, our total taxes and duties were Ps. 395.9 billion, or 26.5% of our sales revenues in the form of taxes and duties, which constituted a substantial portion of the Mexican Government's revenues. On April 21, 2020, the Mexican Government, through a presidential decree, granted us a reduction in our tax burden equal to Ps. 65.0 billion for 2020 via a tax credit applicable to the *Derecho por la Utilidad Compartida* (Profit-sharing Duty, or "DUC"). On February 19, 2021, the Mexican Government, through a presidential decree, granted us a reduction in our tax burden equal to Ps. 73.3 billion for 2021 via a tax credit applicable to the Profit-sharing Duty. As of December 31, 2021, the full amount of the tax credit was applied. As of January 1, 2022, 2021 and 2020, the applicable rate of this duty was 40% 54% and 58%, respectively.

In addition, we are generally required, subject to the conditions set forth in the Petróleos Mexicanos Law, to pay a state dividend to the Mexican Government. We were not required to pay a state dividend from 2017 through 2021, and we will not be required to pay a state dividend in 2022. See "Item 8—Financial Information—Dividends" for more information. Although the Mexican Government has on occasion indicated a willingness to reduce its reliance on payments made by us and recent changes to the fiscal regime applicable to us are designed in part to reduce such reliance by the Mexican Government, we cannot provide assurances that we will not be required to continue to pay a large proportion of our sales revenue to the Mexican Government. See "Item 4—Information on the Company—Taxes, Duties and Other Payments to the Mexican Government—Fiscal Regime." In addition, the Mexican Government may change the applicable rules in the future.

The Mexican Government has entered into agreements with other nations to limit production.

Although Mexico is not a member of OPEC, from time to time it enters into agreements with OPEC and non-OPEC countries to reduce global crude oil supply. During 2021, the average crude oil production (including condensates and not including production from partners) reached 1,735.7 thousand barrels per day. Crude oil production for the year ended December 31, 2021 (including production from partners) averaged 1,756.0 thousand barrels per day. We do not control the Mexican Government's international affairs and the Mexican Government could enter into further agreements with OPEC, OPEC+ or other countries to reduce our crude oil production or exports in the future. A reduction in our oil production or exports may have an adverse effect on our business, results of operations and financial condition. For more information, see "Item 4—Trade Regulation, Export Agreements and Production Agreements."

The Mexican nation, not us, owns the hydrocarbon reserves located in Mexico and our right to continue to extract these reserves is subject to the approval of the Secretaría de Energía (Ministry of Energy or SENER).

The Mexican Constitution provides that the Mexican nation, not us, owns all petroleum and other hydrocarbon reserves located in the subsoil in Mexico. Article 27 of the Mexican Constitution provides that the Mexican Government will carry out exploration and production activities through agreements with third parties and through assignments to and agreements with us. We and other oil and gas companies are allowed to explore and extract the petroleum and other hydrocarbon reserves located in Mexico, subject to assignment of rights by the SENER and entry into agreements pursuant to a competitive bidding process.

Access to crude oil and natural gas reserves is essential to an oil and gas company's sustained production and generation of income, and our ability to generate income would be materially and adversely affected if the Mexican Government were to restrict or prevent us from exploring or extracting any of the crude oil and natural gas reserves that it has assigned to us or if we are unable to compete effectively with other oil and gas companies in future bidding rounds for additional exploration and production rights in Mexico. For more information, see "—We must make significant capital expenditures to maintain our current production levels, and to maintain, as well as increase, the proved hydrocarbon reserves assigned to us by the Mexican Government. Reductions in our income, adjustments to our capital expenditures budget and our inability to obtain financing may limit our ability to make capital investments" below.

Information on Mexico's hydrocarbon reserves is based on estimates, which are uncertain and subject to revisions.

The information on oil, gas and other reserves set forth in this annual report is based on estimates. Reserves valuation is a subjective process of estimating underground accumulations of crude oil and natural gas that cannot be measured in an exact manner; the accuracy of any reserves estimate depends on the quality and reliability of available data, engineering and geological interpretation and subjective judgment.

Additionally, estimates may be revised based on subsequent results of drilling, testing and production. These estimates are also subject to certain adjustments based on changes in variables, including crude oil prices. Therefore, proved reserves estimates may

differ materially from the ultimately recoverable quantities of crude oil and natural gas. Downward revisions in our reserve estimates could lead to lower future production, which could have an adverse effect on our results of operations and financial condition. See "—Risk Factors Related to Our Operations—Crude oil, natural gas and petroleum product prices are volatile and low crude oil and natural gas prices adversely affect our income and cash flows and the amount of hydrocarbon reserves that we have the right to extract and sell" above. We revise annually our estimates of hydrocarbon reserves that we are entitled to extract and sell, which may result in material revisions to these estimates. Our ability to maintain our long-term growth objectives for oil production depends on our ability to successfully develop our reserves, and failure to do so could prevent us from achieving our long-term goals for growth in production.

The *Comisión Nacional de Hidrocarburos* (National Hydrocarbon Commission, or CNH) has the authority to review and approve our estimated hydrocarbon reserves estimates and may require us to make adjustments to these estimates. A request to adjust these reserves estimates could result in our inability to prepare our consolidated financial statements in a timely manner. This could adversely impact our ability to access financial markets, obtain contracts, assignments, permits and other government authorizations necessary to participate in the crude oil and natural gas industry, which, in turn, could have an adverse effect on our business, results of operations and financial condition.

We must make significant capital expenditures to maintain our current production levels, and to maintain, as well as increase, the proved hydrocarbon reserves assigned to us by the Mexican Government. Reductions in our income, adjustments to our capital expenditures budget and our inability to obtain financing may limit our ability to make capital investments.

Because our ability to maintain, as well as increase, our oil production levels is highly dependent upon our ability to successfully develop existing hydrocarbon reserves and, in the long term, upon our ability to obtain the right to develop additional reserves, we continually invest capital to enhance our hydrocarbon recovery ratio and improve the reliability and productivity of our infrastructure. The development of the reserves that were assigned to us by the Mexican Government will demand significant capital investments and will pose significant operational challenges. Our right to develop the reserves assigned to us is conditioned on our ability to develop such reserves in accordance with our development plans, which were based on our technical, financial and operational capabilities at the time. We cannot provide assurances that we will have or will be able to obtain, in the time frame that we expect, sufficient resources or the technical capacity necessary to explore and extract the reserves that the Mexican Government assigned to us, or that it may grant to us in the future. In the past, we have reduced our capital expenditures in response to declining oil prices, and unless we are able to increase our capital expenditures, we may not be able to develop the reserves assigned to us in accordance with our development plans. We would lose the right to continue to extract these reserves if we fail to develop them in accordance with our development plans, which could adversely affect our operating results and financial condition.

In addition, increased competition in the oil and gas sector in Mexico may increase the costs of obtaining additional acreage in potential future bidding rounds for the rights to new reserves. Our ability to make capital expenditures is limited by the substantial taxes and duties that we pay to the Mexican Government, the ability of the Mexican Government to adjust certain aspects of our annual budget, cyclical decreases in our revenues primarily related to lower oil prices and any constraints on our liquidity. The availability of financing may limit our ability to make capital investments that are necessary to maintain current production levels and decrease the proved hydrocarbon reserves that we are entitled to extract. For more information on the liquidity constraints we are exposed to, see "—We have a substantial amount of indebtedness and other liabilities and are exposed to liquidity constraints, which could make it difficult for us to obtain financing on favorable terms and could adversely affect our financial condition, results of operations and ability to repay our debt and, ultimately, our ability to operate as a going concern" above.

In addition, we have entered into strategic alliances, joint ventures and other joint arrangements with third parties in order to develop our reserves. If our partners were to significantly default on their obligations to us, we may be unable to maintain production levels or extract from our reserves. Moreover, we cannot assure you that these strategic alliances, joint ventures and other joint arrangements will be successful or reduce our capital commitments. For more information, see "—Risk Factors Related to Our Operations—We participate in strategic alliances, joint ventures and other joint arrangements. These types of arrangements may not perform as expected, which could harm our reputation and have an adverse effect on our business, results of operations and financial condition" above and "Item 4—Information on the Company—History and Development—Capital Expenditures."

The Mexican Government has historically imposed price controls in the domestic market on our products.

The Mexican Government has from time to time imposed price controls on the sales of natural gas, liquefied petroleum gas, gasoline, diesel, gas oil intended for domestic use, fuel oil and other products. As a result of these price controls, we have not been able to pass on all of the increases in the prices of our product purchases to our customers in the domestic market when the peso depreciates in relation to the U.S. dollar. A depreciation of the peso increases our cost of imported oil and gas products, without a corresponding increase in our revenues unless we are able to increase the price at which we sell products in Mexico.

In accordance with the *Ley de Ingresos de la Federación para el Ejercicio Fiscal de 2017* (2017 Federal Revenue Law), during 2017, the Mexican Government gradually removed price controls on gasoline and diesel as part of the liberalization of fuel prices in Mexico. As of the date of this annual report, sales prices of gasoline and diesel have been fully liberalized and are determined by the free market. For more information, see "Item 4—Information on the Company— Business Overview—Industrial Transformation." However, we do not control the Mexican Government's domestic policies and the Mexican Government could impose additional price controls on the domestic market in the future. The imposition of such price controls would adversely affect our results of operations. For more information, see "Item 4—Information on the Company—Business Overview—Refining—Pricing Regulations."

We may claim some immunities under the Foreign Sovereign Immunities Act and Mexican law, and your ability to sue or recover may be limited.

We are public-sector entities of the Mexican Government. Accordingly, you may not be able to obtain a judgment in a U.S. court against us unless the U.S. court determines that we are not entitled to sovereign immunity with respect to that action. Under certain circumstances, Mexican law may limit your ability to enforce judgments against us in the courts of Mexico. We also do not know whether Mexican courts would enforce judgments of U.S. courts based on the civil liability provisions of the U.S. federal securities laws. Therefore, even if you were able to obtain a U.S. judgment against us, you might not be able to obtain a judgment in Mexico that is based on that U.S. judgment. Moreover, you may not be able to enforce a judgment against our property in the United States except under the limited circumstances specified in the Foreign Sovereign Immunities Act of 1976, as amended. Finally, if you were to bring an action in Mexico seeking to enforce our obligations under any securities issued by Petróleos Mexicanos, satisfaction of those obligations may be made in pesos, pursuant to the laws of Mexico.

Our directors and officers, as well as some of the experts named in this annual report, reside outside the United States. Substantially all of our assets and those of most of our directors, officers and experts are located outside the United States. As a result, investors may not be able to effect service of process on our directors or officers or those experts within the United States.

Item 4. Information on the Company

HISTORY AND DEVELOPMENT

We are the second largest company in Mexico according to the June 2021 edition of *Expansión* magazine, and according to the November 18, 2021 issue of *Petroleum Intelligence Weekly,* we were the eleventh largest crude oil producer and the twentieth largest oil and gas company in the world based on data from the year 2020.

Our executive offices are located at Avenida Marina Nacional No. 329, Colonia Verónica Anzures, 11300, Alcaldía Miguel Hildalgo, Ciudad de México, México. Our telephone number is (52-55) 9126-8700.

In March 1938, President Lázaro Cárdenas del Río nationalized the foreign-owned oil companies that were then operating in Mexico, and the Mexican Congress established Petróleos Mexicanos through the *Decreto que crea la Institución Petróleos Mexicanos* (Decree that creates the entity Petróleos Mexicanos), which was published in the Official Gazette of the Federation and took effect on July 20, 1938.

Legal Regime

On December 21, 2013, amendments to Articles 25, 27 and 28 of the Mexican Constitution took effect, including transitional articles setting forth the general framework and timeline for implementing legislation relating to the energy sector.

On August 11, 2014, this implementing legislation was published in the Official Gazette of the Federation. The implementing legislation includes nine new laws, of which the following are most relevant to our operations:

- *Ley de Petróleos Mexicanos* (Petróleos Mexicanos Law), which took effect, with the exception of certain provisions, on October 7, 2014;
- *Ley de Hidrocarburos* (Hydrocarbons Law), which took effect on August 12, 2014; and
- *Ley de Ingresos sobre Hidrocarburos* (Hydrocarbons Revenue Law).

Together, the Hydrocarbons Law and the Hydrocarbons Revenue Law establish the legal framework for the exploration and production of oil and gas through assignments and contracts, as well as the fiscal regime through which the Mexican Government collects revenues from participants in the Mexican oil and gas industry. The Hydrocarbons Law empowers the SENER to determine

the appropriate contract model for each area that is subject to a competitive bidding process, while the Ministry of Finance and Public Credit is responsible for determining the economic and fiscal terms of each contract. See "—Taxes, Duties and Other Payments to the Mexican Government—Fiscal Regime" below in this Item 4. The following arrangements comprise the contractual regime established by the current legal framework for upstream activities:

- licenses, pursuant to which a license holder is entitled to the oil and gas that are extracted from the subsoil;
- production-sharing contracts, pursuant to which a contractor is entitled to receive a percentage of production;
- profit-sharing contracts, pursuant to which a contractor is entitled to receive a percentage of the profit from the sale of the extracted oil and gas;
- service contracts, pursuant to which a contractor would receive cash payments for services performed; and
- service contracts, together with licenses, production-sharing contracts and profit-sharing contracts are known as the contracts for the exploration and production of oil and gas, collectively referred to as contracts for exploration and production.

For midstream and downstream activities, including oil refining and natural gas processing, the Hydrocarbons Law establishes a permit regime that is granted by the SENER and the *Comisión Reguladora de Energía* (Energy Regulatory Commission, or CRE), as applicable. The Hydrocarbons Law also sets forth the process by which entities may apply for these permits. The CRE has issued permits for the retail sale of gasoline and diesel fuel since 2016.

Under the Petróleos Mexicanos Law, Petróleos Mexicanos is a productive state-owned company, wholly owned by the Mexican Government, and has the corporate purpose of generating economic value and increasing the income of the Mexican nation while adhering to principles of equity, as well as social and environmental responsibility.

On December 2, 2014, the special regime provided for in the Petróleos Mexicanos Law, which governs Petróleos Mexicanos' activities relating to productive state-owned subsidiaries, affiliates, compensation, assets, administrative liabilities, budget, debt levels and the state dividend, took effect. On June 10, 2015, the *Disposiciones Generales de Contratación para Petróleos Mexicanos y Sus Empresas Productivas Subsidiarias* (General Provisions for Contracting for Petróleos Mexicanos and its Productive State-Owned Subsidiaries) were published in the Official Gazette of the Federation, and on June 11, 2015, the special regime for acquisitions, leases, services and public works became effective.

Corporate Structure

As of December 31, 2021, the principal lines of business of the subsidiary entities are as follows:

- Pemex Exploration and Production, formed on June 1, 2015 as a successor to *Pemex-Exploración y Producción* (Pemex-Exploration and Production), explores for, extracts, transports, stores and markets crude oil and natural gas, as well as performs well drilling, termination and repair and related services;
- Pemex Logistics, formed on October 1, 2015, provides transportation, storage and related services for crude oil, petroleum products and petrochemicals to us and other companies, through pipelines and maritime and terrestrial means, and provides guard and management services; and
- Pemex Industrial Transformation, formed on November 1, 2015 as a successor of *Pemex-Refinación* (Pemex-Refining), *Pemex-Gas y Petroquímica Básica* (Pemex-Gas and Basic Petrochemicals) and *Pemex-Petroquímica* (Pemex-Petrochemicals), refines petroleum products and derivatives; processes natural gas, natural gas liquids, artificial gas and derivatives; engages in industrial petrochemical processes; generates, supplies and trades electric and thermal energy; and commercializes, distributes and trades in methane, ethane and propylene. Pemex Industrial Transformation also commercializes, distributes and trades methane, ethane and propylene, directly or through others and also produces, distributes and trades ammonia and its derivatives and fertilizers.

Each of these subsidiary entities is a legal entity empowered to own property and carry on business in its own name and has technical and operational autonomy, subject to the central coordination and strategic direction of Petróleos Mexicanos.

Prior to July 27, 2018, *Pemex Cogeneración y Servicios* (Pemex Cogeneration and Services) operated as an additional productive state-owned subsidiary. On July 13, 2018, the Board of Directors of Petróleos Mexicanos issued the *Declaratoria de Liquidación y Extinción de Pemex Cogeneración y Servicios* (Declaration of Liquidation and Extinction of Pemex Cogeneration and Services), which was published in the Official Gazette of the Federation and became effective on July 27, 2018. As of July 27, 2018, all of the assets, liabilities, rights and obligations of Pemex Cogeneration and Services were automatically assumed by, and transferred

to, Pemex Industrial Transformation, and Pemex Industrial Transformation became, as a matter of Mexican law, the successor to Pemex Cogeneration and Services. Pemex Cogeneration and Services was in turn dissolved effective as of July 27, 2018.

Prior to July 1, 2019, *Pemex Perforación y Servicios* (Pemex Drilling and Services) and *Pemex Etileno* (Pemex Ethylene) operated as an additional productive state-owned subsidiaries. On July 25, 2019, the Board of Directors of Petróleos Mexicanos issued the *Declaratoria de Extinción de Pemex Perforación y Servicios* (Declaration of Extinction of Pemex Drilling and Services) and the *Declaratoria de Extinción de Pemex Etileno* (Declaration of Extinction of Pemex Ethylene), both of which were published in the Official Gazette of the Federation on July 30, 2019 and became effective on July 1, 2019. As of July 1, 2019, all of the assets, liabilities, rights and obligations of Pemex Drilling and Services were assumed by, and transferred to, Pemex Exploration and Production, and Pemex Exploration and Production became, as a matter of Mexican law, the successor to Pemex Drilling and Services. As of July 1, 2019, all of the assets, liabilities, rights and obligations of Pemex Ethylene were assumed by, and transferred to, Pemex Industrial Transformation, and Pemex Industrial Transformation became, as a matter of Mexican law, the successor to Pemex Ethylene. Pemex Drilling and Services and Pemex Ethylene were in turn dissolved effective as of July 1, 2019.

Prior to January 1, 2021, *Pemex Fertilizantes* (Pemex Fertilizers) operated as an additional productive state-owned subsidiary. On January 12, 2021, the Board of Directors of Petróleos Mexicanos issued the *Declaratoria de Extinción de Pemex Fertilizantes* (Declaration of Extinction of Pemex Fertilizers), which was published in the Official Gazette of the Federation on January 27, 2021 and became effective on January 1, 2021. As of January 1, 2021, all of the assets, liabilities, rights and obligations of Pemex Fertilizers were assumed by, and transferred to, Pemex Industrial Transformation, and Pemex Industrial Transformation became, as a matter of Mexican law, the successor to Pemex Fertilizers. Pemex Fertilizers was in turn dissolved effective as of January 1, 2021.

Capital Expenditures

The following table shows our capital expenditures made or expected to be made by each productive state-owned subsidiary, excluding non-capitalizable maintenance, for each of the three years ended December 31, 2021, as well as the budget for these expenditures for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to capital expenditure amounts included in our consolidated financial statements prepared in accordance with IFRS. The following table does not include financial investments in the form of equity contributions of (i) Pemex Industrial Transformation to PTI Infraestructura de Desarrollo, S.A. de C.V., for construction of the new Dos Bocas refinery (2019 to 2022); (ii) Pemex Fertilizers (2019 and 2020) and Pemex Industrial Transformation (2021 and 2022) to Pemex Fertilizantes Pacífico, S.A. de C.V., Pro-Agroindustria, S.A. de C.V., and Grupo Fertinal, S.A. de C.V., intended to support and strengthen the fertilizers business; and (iii) Petróleos Mexicanos to Holdings Holanda Services, B.V., and P.M.I. Holdings Petróleos España, S.L., for the acquisition of the Deer Park refinery in 2022.

Capital Expenditures and Budget by Subsidiary

	Year ended December 31,			Budget
	2021	2020	2019	2022[1]
	(millions of pesos)[2]			
Pemex Exploration and Production	Ps. 134,369	Ps. 107,149	Ps. 98,763	Ps. 208,852
Pemex Industrial Transformation[3]	22,416	11,991	8,953	9,929
Pemex Logistics	4,468	2,955	2,118	7,456
Pemex Drilling and Services[4]	n.a.	n.a.	738	n.a.
Pemex Ethylene[5]	n.a.	n.a.	164	n.a.
Pemex Fertilizers[6]	n.a.	175	203	n.a.
Petróleos Mexicanos[3]	239	205	189	854
Total capital expenditures	**Ps. 161,492**	**Ps. 122,475**	**Ps. 111,128**	**Ps. 227,091**

Note: Numbers may not total due to rounding.

n.a.: Not applicable.

(1) Amended budget was authorized on January 31,2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.
(2) Figures are stated in nominal pesos.

(3) Does not include financial investments in the form of equity contributions of (i) Pemex Industrial Transformation to PTI Infraestructura de Desarrollo, S.A. de C.V., for construction of the new Dos Bocas refinery (2019 to 2022); (ii) Pemex Fertilizers (2019 and 2020) and Pemex Industrial Transformation (2021 and 2022) to Pemex Fertilizantes Pacífico, S.A. de C.V., Pro-Agroindustria, S.A. de C.V., and Grupo Fertinal, S.A. de C.V., intended to support and strengthen the fertilizers business; and (iii) Petróleos Mexicanos to Holdings Holanda Services, B.V., and P.M.I. Holdings Petróleos España, S.L., for the acquisition of the Deer Park refinery in 2022.
(4) Prior to July 1, 2019, Pemex Drilling and Services operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Drilling and Services was merged into Pemex Exploration and Production.
(5) Prior to July 1, 2019, Pemex Ethylene operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Ethylene was merged into Pemex Industrial Transformation.
(6) Prior to January 1, 2021, Pemex Fertilizers operated as an additional productive state-owned subsidiary. As of January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation.

Source: Petróleos Mexicanos.

The following table shows our capital expenditures, excluding non-capitalizable maintenance, by segment for the years ended December 31, 2020 and 2021 and the budget for these expenditures in 2022.

Capital Expenditures by Segment

	Year ended December 31,		Budget
	2021	2020	2022[1]
		(millions of pesos) [2]	
Exploration and Production	Ps. 134,369	Ps. 107,149	Ps. 208,852
Industrial Transformation			
Refining[3]	20,594	10,878	4,379
Gas and Aromatics	1,228	976	3,909
Ethylene	498	137	705
Fertilizers [4]	96	n.a.	936
Total	22,416	11,991	9,929
Logistics	4,468	2,955	7,456
Fertilizers [4]	n.a.	175	n.a.
Petróleos Mexicanos [3]	239	205	854
Total Capital Expenditures	**Ps. 161,492**	**Ps. 122,475**	**Ps. 227,091**

Note: Numbers may not total due to rounding.
n.a.: Not applicable.
(1) Amended budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.
(2) Figures are stated in nominal pesos.
(3) Does not include financial investments in the form of equity contributions of (i) Pemex Industrial Transformation to PTI Infraestructura de Desarrollo, S.A. de C.V., for construction of the new Dos Bocas refinery (2019 to 2022); (ii) Pemex Fertilizers (2019 and 2020) and Pemex Industrial Transformation (2021 and 2022) to Pemex Fertilizantes Pacífico, S.A. de C.V., Pro-Agroindustria, S.A. de C.V., and Grupo Fertinal, S.A. de C.V., intended to support and strengthen the fertilizers business; and (iii) Petróleos Mexicanos to Holdings Holanda Services, B.V., and P.M.I. Holdings Petróleos España, S.L., for the acquisition of the Deer Park refinery in 2022.
(4) Prior to January 1, 2021, Pemex Fertilizers operated as an additional productive state-owned subsidiary. As of January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation.

Source: Petróleos Mexicanos.

In addition to the capital expenditure budget, the financial investment budget includes equity contributions by the Mexican Government, which are used for the construction of the Dos Bocas Refinery by our subsidiary company PTI Infraestructura de Desarrollo, S.A. de C.V. In 2021, the budget assigned for this purpose amounted to Ps. 45,050 million and actual contributions during 2021 reached Ps. 113,785 million. For 2022, the financial investment budget includes Ps. 45,000 million for the construction of the Dos Bocas Refinery.

Capital Expenditures Budget

Capital expenditures and budget by project are described under each segment below in this Item 4.

The weighted average Mexican crude oil export price for 2021 was U.S. $65.13 per barrel. Based on its estimate that the weighted average Mexican crude oil export price would be U.S. $55.10 per barrel, the Mexican Congress approved a 2022 budget of Ps. 636.3 billion, including operational expenses, and a financial budget deficit of Ps. 62.8 billion. Our management expects that we will be able to maintain our medium- and long-term growth plans without the need to incur indebtedness beyond the amount included in our approved financing program for 2022 of Ps. 65.0 billion because our financial balance projections consider additional actions, such as implementation of optimization measures and further investment in new projects that we expect will contribute to the generation of increased revenues. The budget was based on the guiding principles of: maintaining the industrial safety and reliability of our facilities; consolidating the stabilization of crude oil and gas production levels, increase these levels towards the end of the year and sustain that growth in the medium and long term; increase the crude processing capacity in the National Refining System; and meeting our labor and financial obligations.

On January 31, 2022 an amendment to our original budget was authorized for 2022, which considers a total investment budget of Ps. 452.4 billion for capital expenditures, including Ps. 155.1 billion for non-capitalizable maintenance and Ps. 70.2 billion for financial investment. The financial investment budget includes Ps. 45.0 billion in capital contributions to our subsidiary company PTI Infraestructura de Desarrollo, S.A. de C.V. for the construction of our new refinery in Dos Bocas, Paraíso, Tabasco, Ps. 2.4 billion in capital contributions to the subsidiaries of our fertilizers business line and $22.7 billion for the acquisition of the Deer Park refinery. Our net capital expenditures budget is Ps. 227.1 billion. We expect to direct Ps. 208.9 billion (or 92.0%) to exploration and production programs in 2022. This investment in exploration and production activities reflects our focus on maximizing the potential of our hydrocarbon reserves and our most productive projects. In addition, in 2022 we expect to direct Ps. 9.9 billion (or 4.4%) to our industrial transformation segment. We continuously review our capital expenditures portfolio in accordance with our current and future business plans, as well as business opportunities.

Our main objectives for upstream investment are to maximize our long-term economic value, and to increase and improve the quality of the oil and gas reserves assigned to us, enhance Pemex Exploration and Production's reserves recovery ratio, improve the reliability of its production and transportation infrastructure for crude oil and natural gas operations and continue to emphasize industrial safety and compliance with environmental regulations. Our 2022 budget objectives include maintaining crude oil production at levels sufficient to satisfy domestic demand and have a surplus available for export and maintaining natural gas production levels.

Our downstream investment program seeks to increase our refining capacity, to improve the quality of our product selection and the reliability of our logistics and distribution services, to achieve a level of efficiency comparable to that of our international competitors and to continue to emphasize industrial safety and environmental compliance.

BUSINESS OVERVIEW

Overview by Business Segment

Exploration and Production

Our exploration and production segment operates through the productive state-owned subsidiary Pemex Exploration and Production and explores for and produces crude oil and natural gas, primarily in the northeastern and southeastern regions of Mexico and offshore in the Gulf of Mexico. In nominal peso terms, our capital expenditures in exploration and production activities increased by 25.4 % in 2021. As a result of these investments, our total hydrocarbon production reached a level of approximately 903.1 million barrels of oil equivalent in 2021. Further, our crude oil production increase by 2.9% from 2020 to 2021, averaging 1,735.7 thousand barrels per day in 2021, primarily as a result of the development of our new offshore fields Cheek, Itta, Koban, Mulach, Manik NW, Octli, Pokche, Tlacame, Tlamatini, Tetl, Xolotl, Yaxche and onshore field projects Tupilco Profundo, Quesqui, Cibix and Ixachi and workovers, improvements and diversification of artificial systems at our other onshore fields that helped maintain production levels.

Our natural gas production (excluding natural gas liquids) decreased 1.9% from 2020 to 2021, averaging 4,670.5 million cubic feet per day in 2021. This decrease in natural gas production resulted primarily from the decreased volumes in the Cantarell, Ku-Maloob-Zaap, Tsimin-Xux, Crudo Ligero Marino, Cuenca Integral Macuspana y Ogarrio-Sánchez Magallanes and Cuenca de Burgos projects. Exploration drilling activity increased by 88.2% from 2020 to 2021, from 17 exploratory wells completed in 2020 to 32 exploratory wells completed in 2021. Development drilling activity decreased by 23.5% from 2020 to 2021, from 166 development wells completed in 2020 to 127 development wells completed in 2021. In 2021, we completed the drilling of 159 wells in total. In 2021, our exploration drilling activity was focused on the shallow waters of the Gulf of Mexico and onshore regions and the development drilling activity was focused on increasing the production of crude oil and associated gas at new offshore fields Cheek,

Itta, Koban, Mulach, Manik NW, Octli, Pokche, Tlacame, Tlamatini, Tetl, Xolotl, Yaxche and onshore field projects Tupilco Profundo, Quesqui, Cibix and Ixachi.

In advance of 2021, we planned to invest in 3 new developments, one of them in shallow water, and two onshore fields. We will continue with the development of the other 24 of the 26 fields we have been developing during 2019 and 2020, since Jaatsul and Hok are no longer in development. Along 2021, we incorporated Paki shallow water fields and Racemosa and Tupilco Profundo onshore fields into our development plan, bringing our total investment in new developments to 27 fields, 21 in shallow water and 6 onshore fields. As of December 31, 2021, we had begun production in 24 of these 27 fields. These 24 fields had an average production of 221.2 thousand barrels per day of crude oil and 567.8 million cubic feet per day of natural gas in 2021.

Our primary objectives for 2022 include: (i) to have hydrocarbon reserves incorporation rates aligned with the production targets; (ii) optimize the portfolio of exploration and production and (iii) increase the reliability, safety and operational efficiency of the facilities, as well as reduce health risks in the face of the new normal. We aim to meet these objectives through the following strategies: (1) increase and accelerate the incorporation of hydrocarbon reserves by prioritizing our exploration activities onshore, in conventional shallow waters and in adjacent blocks; (2) accelerating secondary and enhanced recovery processes to increase the recovery factor for hydrocarbon reserves in our mature fields; (3) expediting the development of newly discovered fields; (4) prioritizing and developing activities that improve the restitution rate of proved reserves; (5) carry out activities to mitigate the production decline of the oil and gas fields and (6) reduce costs and increase the efficiency of operations in exploration, production and industrial transformation.

Entering 2022, our production goals include producing crude oil at a level of approximately 1,852.6 thousand barrels per day and maintaining natural gas production above 5,119.9 million cubic feet per day. We aim to meet these production goals through (a) exploration and development activities, (b) increasing inventory reserves through new discoveries and reclassifications and (c) managing the decline in field production by focusing our exploration and production activities in areas where we have greater experience and higher historical success rates, such as secondary and tertiary recovery systems. In addition, we intend to reallocate resources away from deep-water projects, which tend to be expensive and long-term activities, and towards shallow water and onshore projects, which have the potential for near-term results. We plan to continue the development of twenty seven fields in 2022; (i) twenty of which, are the fields in shallow waters we began to develop in 2019-2020; (ii) one field in shallow water we began to develop in 2021; (iii) four fields onshore have been in development since 2019, and (iv) two fields onshore we began to develop in 2021. We expect that these twenty seven fields will be able to produce an aggregate of up to 521 thousand barrels per day of crude oil during 2022.

Industrial Transformation

Our industrial transformation segment is comprised of four principal activities: (i) refining, (ii) gas and aromatics, (iii) ethylene and derivatives and (iv) fertilizers, since January 1, 2021.

Refining

Pemex Industrial Transformation converts crude oil into gasoline, jet fuel, diesel, fuel oil, asphalts and lubricants. We also distribute and market most of these products throughout Mexico. During 2021, atmospheric distillation refining capacity remained stable at 1,640.0 thousand barrels per day.

In 2021, crude oil processing by the National Refining System registered an increase of 20.5%, from 590.6 thousand barrels per day in 2020 to 711.6 thousand barrels per day in 2021. Pemex Industrial Transformation produced 722.4 thousand barrels per day of refined products in 2021, a 21.1% increase as compared to 596.4 thousand barrels per day in 2020. This performance is the result of the execution of the National Refining System rehabilitation program.

Our primary goals for 2022 include: (i) continuing the efforts of the National Refining System rehabilitation program, (ii) increasing processing and production levels of gasoline and diesel, and (iii) improve the occupancy of the National Refining System refineries.

In addition in January 2022, we purchased the 50.005% share in Deer Park owned by the Shell Oil Company which, in addition to the 49.995% therefore becoming owner of Deer Park. We look forward strengthening our petroleum products production in order to decrease imports and become self-sufficient in fuels in the near future (see Note 28-F).

Gas and Aromatics

Pemex Industrial Transformation processes wet natural gas to produce dry natural gas, ethane, liquefied petroleum gas (LPG) and other natural gas liquids, along with aromatic derivatives chain products such as toluene, benzene and xylene. In 2021, our total sour natural gas processing capacity remained at 4,523.0 million cubic feet per day.

In 2021, we processed 2,628.2 million cubic feet per day of wet natural gas of which 2,224.6 million cubic feet per day were sour wet gas and 403.6 million cubic feet per day were sweet wet gas. This is 5.0% lower than the 2,765.4 million cubic feet per day we processed in 2020, due to a reduction in wet gas process level as a result of lower supply of wet gas from Pemex Exploration and Production.

In 2021, we produced 171.1 thousand barrels per day of natural gas liquids, a 17.5% decrease as compared to 207.4 thousand barrels per day in 2020. In 2021, we also produced 2,080.3 million cubic feet per day of dry gas (which is natural gas with a methane content of more than 90.0%), a decrease of 7.3% compared to the 2,245.2 million cubic feet per day produced in 2020. This decrease is mainly explained by lower gas production in Nuevo Pemex, Burgos and Poza Rica gas processing complexes, as a consequence of a lower supply of wet sour and sweet gas by Pemex Exploration and Production. In contrast, gas processing complexes that increased their gas production were: La Venta, Cactus and Ciudad Pemex.

In 2021, we produced 474.6 thousand tons of aromatics and derivatives, an increase of 41.1% compared to 336.4 thousand tons in 2020, as a result of the prolonged operative times of the Catalytic Reforming Cycle unit at La Cangrejera petrochemical complex.

Our primary goal for 2022 for this business line will be to perform maintenance and rehabilitation of units to increase process efficiency and increase the production of dry gas, LPG, ethane and naphtha at gas processing complexes.

Ethylene and Derivatives

Pemex Industrial Transformation produces, distributes and markets ethane and propylene derivatives. In 2021, we produced a total of 854.6 thousand tons of petrochemical products, a 26.0% decrease from the 1,154.1 thousand tons of petrochemical products produced in 2020. This decrease was mainly due to operational problems at the derivatives units and auxiliary services.

Our ethylene segment leverages the integration of the ethane production chain to manufacture several petrochemical products, including:

- ethane derivatives, such as ethylene, polyethylene, ethylene oxide and glycols;
- propylene and derivatives; and
- other products, including, but not limited to, oxygen, nitrogen, hydrogen and butadiene.

The primary goal for our ethylene and derivatives segment in 2022 is to continue to take advantage of the installed capacity of its secondary petrochemical units, ensuring their operational reliability to capture the value generated by these chains.

Fertilizers

As of January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation. Therefore, our fertilizers segment operated through the productive state-owned subsidiary Pemex Fertilizers until December 31, 2020, and operates through the productive state-owned subsidiary Pemex Industrial Transformation as of January 1, 2021 as a line of business.

Our fertilizers business integrates the ammonia production chain. In 2021, the ammonia VI unit in the Cosoleacaque petrochemical complex, reached a production of 646.5 thousand tons, of which 243.9 thousand tons were ammonia, which represents an increase of 107.5 thousand tons compared to 2020, as a result of the continuous operation of the unit. Carbon dioxide production was 402.6 thousand tons, which represents an increase of 119.9 thousand tons as compared to 2020.

For the fertilizer business line in 2022, we will continue to take advantage of the installed capacity of the secondary petrochemical units, ensuring their operational reliability to capture the value generated by these chains.

Logistics

Our logistics segment operates through the productive state-owned subsidiary Pemex Logistics and provides land, maritime and pipeline transportation, storage and distribution services to some of our subsidiaries and other companies, including Tesoro México Supply & Marketing, S. de R.L. de C.V. (a subsidiary of Marathon Petroleum Corporation), which we refer to as Tesoro, local gas stations and distributors.

During 2021, we injected 1,272.9 thousand barrels per day of crude oil and petroleum products into our pipelines, representing a 11.6% increase as compared to 2020 when we injected 1,140.6 thousand barrels per day, mainly due to an increase in demand of pipeline transportation services.

During 2021, we injected 125.0 thousand barrels per day of LPG, representing a 6.9% decrease as compared to the 134.2 thousand barrels per day of LPG injected in 2020, due to a decrease in the requirements of Pemex Industrial Transformation in the terminals and interconnections associated with the pipeline transport system for liquefied petroleum gas. Additionally, we injected 3.1 thousand barrels per day of petrochemicals in 2021, a decrease of 18.4% as compared to the 3.8 thousand barrels per day we injected in 2020. This decrease was mainly due to decreased demand for isobutane at the Minatitlán and Salina Cruz refineries.

In 2021, we transported a total of 1,952.5 thousand barrels per day of petroleum products: 1,401.0 thousand barrels per day (71.8%) were injected by pipeline systems, 371.7 thousand barrels per day (19.0%) were transported by land and the remaining 179.8 thousand barrels per day (9.2%) were transported by tankers.

International Trading

The international trading segment provides us with international trading, distribution, risk management, insurance and transportation services. This segment operates through P.M.I. Comercio Internacional, S.A. de C.V. (which we refer to as PMI), P.M.I. Trading DAC, (which we refer to as P.M.I. Trading), P.M.I. Norteamérica, S.A. de C.V., (which we refer to as PMI-NASA, and, together with PMI and P.M.I. Trading, we collectively refer to as the PMI Subsidiaries) and Mex Gas International, S.L. (which, together with the PMI Subsidiaries, we collectively refer to as the Trading Companies). Certain of the Trading Companies sell, buy and transport crude oil, refined products and petrochemicals in world markets, and provide related risk management, insurance, transportation and storage services. The Trading Companies have offices in Mexico City, Houston and Singapore. Export sales are made through PMI to major customers in various foreign markets.

In 2021, our crude oil exports decreased in volume by 9.1%, from 1,119.9 thousand barrels per day in 2020 to 1,018.4 thousand barrels per day in 2021. Natural gas imports increased by 6.0% in 2021, from 853.1 million cubic feet per day in 2020 to 904.6 million cubic feet per day in 2021. In 2021, our exports of petrochemical products increased by 174.9%, from 40.2 thousand metric tons in 2020 to 110.5 thousand metric tons in 2021, and our imports of petrochemical products decreased by 9.5%, from 386.0 thousand metric tons in 2020 to 349.2 thousand metric tons in 2021. In 2021, our exports of other petroleum products and liquefied petroleum gas increased by 26.1%, from 127.1 thousand barrels per day in 2020 to 160.3 thousand barrels per day in 2021, and our imports of other petroleum products and liquefied petroleum gas increased by 5.0%, from 197.3 thousand barrels per day in 2020 to 207.2 thousand barrels per day in 2021. As a major supplier of crude oil to the United States, our international trading segment's crude oil exports to the United States totaled U.S.$ 13.6 billion in 2021, an increase of U.S. $4.9 billion with respect to 2020.

Infrastructure of PEMEX

Exploration and Production

Exploration and Drilling

We seek to identify new oil reservoirs through our exploration program in order to increase the future replacement rate of proved reserves. From 1990 to 2021, we completed 14,134 exploration and development wells. During 2021, our average success rate for exploratory wells was 53.1%, a 50.4% increase as compared to 2020 and our average success rate for development wells was 99.2%, a 4.2% increase as compared 95.2% to 2020. From 2017 to 2021, we discovered 19 new fields. We discovered seven of these new fields during 2021, bringing the total number of our producing fields to 6,515 at the end of 2021.

Our 2021 exploration program was comprised of exploration in both onshore regions and offshore regions in the waters of the Gulf of Mexico. These exploratory activities yielded 68.0 million barrels of oil equivalent of proved reserves resulting from the discovery of seven oil producing fields and an extension from the drilling of one appraisal well in existing field.

The following table summarizes our drilling activity for the five years ended December 31, 2021, all of which occurred in Mexican territory.

	Year ended December 31,				
	2021	2020	2019	2018	2017
Wells initiated[1]	159	157	182	166	70
Exploratory wells initiated[1]	32	28	32	28	22
Development wells initiated[1]	127	129	150	138	48
Wells drilled[2]	159	183	221	162	79
Exploratory wells	32	17	23	19	24
Productive exploratory wells[3]	17	6	12	5	10
Dry exploratory wells	15	11	11	14	14
Success rate %	53.1	35	52	26	42
Development wells	127	166	198	143	54
Productive development wells	126	158	186	137	50
Dry development wells	1	8	12	6	4
Success rate %[4]	99	95	94	96	93
Producing wells (annual averages)	7,767	6,326	7,400	7,671	6,699
Marine region	647	517	520	519	443
Southern region	1,150	855	1,012	1,029	931
Northern region	5,970	4,954	5,868	6,123	5,325
Producing wells (at year end)[5]	6,515	6,303	6,945	6,946	8,194
Crude oil	3,977	3,949	4,323	4,321	4,956
Natural gas	2,538	2,354	2,622	2,625	3,238
Producing fields	323	313	319	356	398
Marine region	58	49	43	43	43
Southern region	74	76	76	83	91
Northern region	191	188	200	230	264
Drilling rigs	80	84	84	84	83
Kilometers drilled	503	638	646	455	280
Average depth by well (meters)	3,525	3,486	2,870	2,808	3,639
Discovered fields[6]	7	2	3	4	3
Crude oil	6	2	—	4	1
Natural gas	—	—	—	—	2
Gas and condensate	1	—	3	—	—
Average crude oil and natural gas output by well (barrels of oil equivalent per day)	379	382	327	329	291
Total developed acreage (km^2)[7]	**7,391[8]**	**7,419[8]**	**7,077[8]**	**6,923[8]**	**6,886[8]**
Total undeveloped acreage (km^2)[7]	**695[8]**	**616[8]**	**603[8]**	**607[8]**	**620[8]**

Note: Numbers may not total due to rounding.

(1) "Wells initiated" refers to the number of wells the drilling of which commenced in a given year, regardless of when the well was or will be completed.

(2) "Wells drilled" refers to the number of wells the drilling of which was completed in a given year, regardless of when the drilling of the well commenced.

(3) Excludes wells abandoned due to mechanical failure.

(4) Excludes injector wells.

(5) Figures include fractional interests obtained pursuant to joint ventures and associations.

(6) Includes: (i) new fields with proved reserves (Tupilco Profundo, Racemosa, Tum, Chawila, Kuun, Tlakati and Tekuani).

(7) Figures include fractional interests obtained pursuant to joint ventures and associations.

(8) These values relate only to our current assignments.

Source: Pemex Exploration and Production.

Extensions and Discoveries

During 2021, our exploratory activity in the shallow waters of the Gulf of Mexico and onshore regions resulted in the discovery of six new crude oil fields (Tekuani, Tlakati, Chawila, Kuun, Racemosa and Tupilco Profundo), and one new gas and condensate field (Tum). In addition, extension activities in our Camatl field led to the incorporation of additional reserves. Together, these extensions and discoveries led to the incorporation of 68.0 million barrels of oil equivalent.

Reserves

Under the Mexican Constitution, all oil and other hydrocarbon reserves located in the subsoil of Mexico are owned by the Mexican nation and not by us. Pemex Exploration and Production has the right to extract, but not own, the reserves granted to us by the Mexican Government and to sell the resulting production. As of the date of this report, the exploration and development activities of Petróleos Mexicanos and the subsidiary entities are limited to reserves located in Mexico.

Proved oil and natural gas reserves are those estimated quantities of crude oil, natural gas and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be economically producible from a given date forward, from known reservoirs and under existing economic conditions, operating methods and government regulations.

Proved reserves estimates as of December 31, 2021 were prepared by our exploration and production segment and were reviewed by the Independent Engineering Firms (as defined below), which audit the estimates of our oil and gas reserves. Pursuant to the *Lineamientos que Regulan los Procedimientos de Cuantificación y Certificación de Reservas de la Nación* (Guidelines for Regulating the Nation's Reserves Quantification and Certification Procedures), the CNH must review the proved reserves reports estimates every year and issue a resolution no later than the second week of April of the following year. However, as of the date of this report, the CNH has not yet issued a resolution with respect to the reserves report as of December 31, 2021. See "Item 3—Key Information—Risk Factors—Risk Factors Related to our Relationship with the Mexican Government— Information on Mexico's hydrocarbon reserves is based on estimates, which are uncertain and subject to revisions."

We estimate reserves based on generally accepted petroleum engineering and evaluation methods and procedures, which are based primarily on applicable SEC regulations and, as necessary, the Society of Petroleum Engineers' (which we refer to as the SPE) publication entitled Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information, dated June 25, 2019 and other SPE publications, as amended, including the SPE's publication entitled Petroleum Resources Management System, as well as other technical sources, including Estimation and Classification of Reserves of Crude Oil, Natural Gas, and Condensate, by Chapman Cronquist, and Determination of Oil and Gas Reserves, Petroleum Society Monograph Number 1, published by the Canadian Institute of Mining and Metallurgy & Petroleum. The choice of method or combination of methods employed in the analysis of each reservoir is determined by:

- experience in the area;
- stage of development;
- quality and completeness of basic data; and
- production and pressure histories.

Reserves data set forth herein represent only estimates. Reserves valuation is a subjective process of estimating underground accumulations of crude oil and natural gas that cannot be measured in an exact manner. The accuracy of any reserves estimate depends on the quality of available data, engineering and geological interpretation and professional judgment. As a result, estimates of different engineers may vary. In addition, the results of drilling, testing and producing subsequent to the date of an estimate may lead to the revision of an estimate. See "Item 3—Key Information—Risk Factors"

During 2021, we did not record any material increase in our proved oil and gas reserves as a result of the use of new technologies.

In order to ensure the reliability of our reserves estimation efforts, we have undertaken the internal certification of our estimates of reserves since 1996. We have established certain internal controls in connection with the preparation of our proved reserves estimates. Initially, teams of geoscientists from our exploration and production business units (with each of these units covering several projects) prepare the reserves estimates, using distinct estimation processes for valuations relating to new discoveries and developed fields, respectively. Subsequently, the regional reserves offices collect these reserves estimates from the units and request that the *Gerencia de Certificación de Reservas de Hidrocarburos* (Office of Certification of Hydrocarbon Reserves), the central hydrocarbon reserves management body of Pemex Exploration and Production, review and certify such valuations and the booking of the related reserves. This internal certification process is undertaken in accordance with internal guidelines for estimating and classifying proved reserves, which are based on the SEC's rules and definitions. The Office of Certification of Hydrocarbon Reserves, which additionally oversees and conducts an internal audit of the process described above, consists entirely of professionals with geological, geophysical, petrophysical and reservoir engineering backgrounds. Additionally, the engineers who participate in our reserves estimation process are experienced in: reservoir numerical simulation; well drilling and completion; pressure, volume and temperature (PVT) and analytical tools used in forecasting the performance of the various elements comprising the production system; and design strategies in petroleum field development. Furthermore, all of our personnel have been certified by the *Secretaría de Educación Pública* (Ministry of Public Education), most have earned master's degrees in areas of study such as petroleum engineering, geology and geophysical engineering and they possess an average of over fifteen years of professional experience.

In addition to this internal review process, our exploration and production segment's final reserves estimates are audited by independent engineering firms. Four independent engineering firms audited our estimates of proved reserves as of December 31, 2021, or January 1, 2022, as applicable. DeGolyer and MacNaughton, GLJ, Ryder Scott and Sproule (we refer to these firms together as the Independent Engineering Firms). The reserves estimates reviewed by the Independent Engineering Firms totaled 89.0% of our estimated proved reserves. The remaining 11.0% of our estimated proved reserves consisted mainly of reserves located in certain areas that have been shared with third parties. DeGolyer and MacNaughton audited the reserves in the Cantarell, Ku-Maloob-Zaap, Bellota-Jujo and Samaria-Luna business units, GLJ audited the reserves in the Poza Rica-Altamira, Abkatún-Pol-Chuc and Litoral de Tabasco business units, Sproule audited the reserves in the Cinco Presidentes and Macuspana-Muspac business units and Ryder Scott audited the reserves in the Reynosa, Veracruz business units and fields recently added to our inventory registry. The audits conducted by the Independent Engineering Firms consisted primarily of: (1) analysis of historical static and dynamic reservoir data that we have provided; (2) construction or updating of the Independent Engineering Firms' own static and dynamic reservoir characterization models of some of our fields; (3) economic analysis of fields; and (4) review of our production forecasts and reserves estimates.

Since reserves estimates are, by definition, only estimates, they cannot be reviewed for the purpose of verifying exactness. Instead, the Independent Engineering Firms conducted a detailed review of our reserves estimates so that they could express an opinion as to whether, in the aggregate, the reserves estimates we furnished were reasonable and had been estimated and presented in conformity with generally accepted petroleum engineering and evaluation methods and procedures.

All questions, including any suggested modifications to prove reserves estimates, that arose during the Independent Engineering Firms' review process were resolved by our exploration and production segment to the satisfaction of the Independent Engineering Firms. The Independent Engineering Firms have concluded that our estimated total proved oil and natural gas reserve volumes set forth in this report are, in the aggregate, reasonable and have been prepared in accordance with Rule 4-10(a) of Regulation S-X of the SEC, as amended (which we refer to as Rule 4-10(a)), are consistent with international reserves reporting practice and are in accordance with the revised oil and gas reserves disclosure provisions of ASC Topic 932.

Our total proved developed and undeveloped reserves of crude oil, condensates and liquefiable hydrocarbons recoverable from field processing plants increased by 0.5% in 2021, from 6,041.0 million barrels in 2020 to 6,073.0 million barrels in 2021. This small increase was due to discoveries, developments, delineations and revisions of our proved reserves, in particular to the recategorization due to drilling of development wells in the Quesqui, Madrefil, Yaxche, Tlamatini, Mulach and Tlacame fields, as well as variations due to revisions in the Quesqui, Xanab, Cheek, Zaap and Tamaulipas-Constituciones fields and the discovery of the Tupilco Profundo, Racemosa, Tekuani, Tlakati, Kuun, Chawila and Tum oil fields. Our proved developed reserves of crude oil, condensates and liquefiable hydrocarbons recoverable from processing plants increased by 1.3% in 2021, from 3,603.4 million barrels in 2020 to 3,648.9 million barrels in 2021. The amount of our proved reserves of crude oil, condensate and liquefiable hydrocarbon reserves added in 2021 was sufficient to offset the level of production in 2021, which amounted to 697.1 million barrels of crude oil, condensates and liquefiable hydrocarbons.

Our total proved developed and undeveloped dry gas reserves increased by 0.8% in 2021, from 6,984.2 billion cubic feet at December 31, 2020 to 7,039.5 billion cubic feet at December 31, 2021. Our proved developed dry gas reserves increased by 0.3% in 2021, from 3,922.3 billion cubic feet at December 31, 2020 to 3,933.7 billion cubic feet at December 31, 2021. This increase was principally due to an increase in proved developed dry gas reserves of the Ixachi, Quesqui, Ku, Maloob, Madrefill, Teotleco, Xux and May fields. The amount of dry gas reserves added in 2021 was sufficient to offset the level of production in 2021, which amounted to 750.9 billion cubic feet of dry gas. Our proved undeveloped dry gas reserves increased by 1.4% in 2021, from 3,061.9 billion cubic feet at December 31, 2020 to 3,105.8 billion cubic feet at December 31, 2021. This increase was principally due to an increase in proved undeveloped dry gas reserves of the Quesqui, Tupilco Profundo, Teca, Homol and Cuitláhuac fields.

During 2021, our exploratory activity in the shallow waters of the Gulf of Mexico and onshore regions resulted in the discovery of six new fields: the Tekuani, Tlakati, Chawila, Kuun, Racemosa and Tupilco Profundo crude oil fields and one new gas and condensate field was also discovered: Tum. In addition, extension activities in our Camatl field led to the incorporation of additional proved reserves. Together, these extensions and discoveries led to the incorporation of 68.0 million barrels of oil equivalent.

In 2021, our proved reserves increased by 43 million barrels of oil equivalent due to reclassifications, development, revisions and discoveries.

The following three tables of crude oil and dry gas reserves set forth our estimates of our proved reserves determined in accordance with Rule 4-10(a).

Summary of Oil and Gas[1] Proved Reserves as of December 31, 2021
Based on Average Fiscal Year Prices

	Crude Oil and Condensates[2] (in millions of barrels)	Dry Gas[3] (in billions of cubic feet)
Proved developed and undeveloped reserves		
Proved developed reserves	3,648.9	3,933.7
Proved undeveloped reserves	2,424.0	3,105.8
Total proved reserves	**6,073.0**	**7,039.5**

Note: Numbers may not total due to rounding

(1) We do not currently produce synthetic oil or synthetic gas, or other natural resources from which synthetic oil or synthetic gas can be produced.

(2) Crude oil and condensate reserves include the fraction of liquefiable hydrocarbons recoverable in natural gas processing plants located at fields.

(3) Reserve volumes reported in this table are volumes of dry gas, although natural gas production reported in other tables refers to sour wet gas. There is a shrinkage in volume when natural gas liquids and impurities are extracted to obtain dry gas. Therefore, reported natural gas volumes are greater than dry gas volumes.

Source: Pemex Exploration and Production.

Crude Oil and Condensate Reserves
(including natural gas liquids)[1]

	2021	2020	2019	2018	2017
Proved developed and undeveloped reserves			(in millions of barrels)		
At January 1	6,041	5,961	5,786	6,427	7,219
Revisions[2]	565	651	784	22	(95)
Extensions and discoveries	115	97	78	140	147
Production	(697)	(695)	(688)	(743)	(805)
Farm-outs and transfer of E&P contracts and fields due to CNH bidding process	49	27	—	(59)	(38)
At December 31	6,073	6,041	5,961	5,786	6,428
Proved developed reserves at December 31	**3,649**	**3,603**	**3,585**	**3,588**	**4,166**
Proved undeveloped reserves at December 31	**2,424**	**2,438**	**2,376**	**2,198**	**2,261**

Note: Numbers may not total due to rounding.

(1) Crude oil and condensate reserves include the fraction of liquefiable hydrocarbons recoverable in natural gas processing plants located at fields.

(2) Revisions include positive and negative changes due to new data from well drilling, revisions made when actual reservoir performance differs from expected performance and the effect of changes in hydrocarbon prices.

Source: Pemex Exploration and Production.

Dry Gas Reserves

	2021	2020	2019	2018	2017
Proved developed and undeveloped reserves			(in billions of cubic feet)		
At January 1	6,984	6,352	6,370	6,593	6,984
Revisions[1]	195	1,240	656	3	169
Extensions and discoveries	590	176	196	809	468
Production[2]	(751)	(819)	(870)	(887)	(999)
Farm-outs and transfer of E&P contracts and fields due to CNH bidding process	21	35	—	(148)	(29)
At December 31	7,040	6,984	6,352	6,370	6,593
Proved developed reserves at Proved developed and undeveloped reserves December 31	**3,934**	**3,922**	**3,609**	**3,380**	**4,026**
Proved undeveloped reserves at December 31	**3,106**	**3,062**	**2,743**	**2,990**	**2,567**

Note: Numbers may not total due to rounding.

(1) Revisions include positive and negative changes due to new data from well drilling, revisions made when actual reservoir performance differs from expected performance and the effect of changes in hydrocarbon prices.

(2) Production refers here to dry gas, although natural gas production reported in other tables refers to sour wet gas. There is a shrinkage in volume when natural gas liquids and impurities are extracted to obtain dry gas. Therefore, reported natural gas volumes are greater than dry gas volumes.

Source: Pemex Exploration and Production.

The following table sets forth, as of December 31, 2021, the volumes of proved developed and undeveloped reserves, the number of producing wells and the number of proved undeveloped locations for the fields that contained 96.6% of our proved reserves.

Field	Reserves			Number of Producing Wells	Number of Undeveloped Locations[2]
	Proved[1]	Developed[1]	Undeveloped[1]		
	(in millions of barrels of oil equivalent)				
Ku-Maloob-Zaap	1,075.0	836.2	238.8	184	20
Aceite Terciario del Golfo [3]	653.0	114.1	538.9	1,348	3276
Antonio J. Bermudez [4]	104.4	65.3	39.0	185	18
Balam [5]	179.4	162.7	16.8	17	3
Ek [5]	95.1	63.2	31.8	18	2
Ayatsil	983.0	606.9	376.1	20	16
Ixachi	604.8	281.9	322.9	9	15
Akal	583.3	583.3	0.0	55	0
Quesqui	521.5	136.9	384.6	8	19
Kayab	178.1	0.0	178.1	0	26
Pit	151.8	0.0	151.8	0	13
Santuario-El Golpe-Caracolillo	77.9	33.2	44.7	20	0
Tamaulipas Constituciones	75.7	54.4	21.3	253	87
Onel	73.9	73.9	0.0	18	0
Suuk	68.4	9.2	59.2	0	5
Pokche	67.1	7.3	59.7	3	8
Yaxché	64.7	64.7	0.0	25	0
Madrefil	61.3	52.8	8.4	8	1
Tekel	60.7	0.0	60.7	0	8
Lakach	60.3	0.0	60.3	0	4
Teotleco	58.9	55.8	3.2	19	1
CNH-M4-ÉBANO/2018	57.9	9.4	48.5	153	n.a
Xanab	52.8	52.8	0.0	10	0
Arenque	42.8	34.1	8.6	16	2
Utsil	41.8	0.0	41.8	0	8
Tizón	34.7	34.7	0.0	8	0
Etkal	33.9	18.0	16.0	2	2
Jujo-Tecominoacán	32.9	25.7	7.2	17	5

Field	Reserves			Number of Producing Wells	Number of Undeveloped Locations[2]
	Proved[1]	Developed[1]	Undeveloped[1]		
	(in millions of barrels of oil equivalent)				
Tupilco Profundo	32.6	5.6	27.0	1	5
Sini	31.8	28.1	3.7	8	2
Sihil	31.3	31.3	0.0	17	0
Poza Rica	30.9	23.1	7.7	197	23
Cheek	29.3	29.3	0.0	4	0
Tlacame	28.4	28.4	0.0	6	0
Ayín	28.4	0.0	28.4	0	4
Tlamatini	26.6	26.6	0.0	6	0
Xux	26.2	26.2	0.0	10	0
Cuitláhuac	25.5	16.6	8.9	194	46
May	24.7	24.7	0.0	9	0
Mulach	22.4	20.0	2.4	8	1
Eltreinta	22.0	18.9	3.1	16	3
Ixtal	21.6	21.6	0.0	14	0
Giraldas	20.7	20.7	0.0	8	0
Och	20.0	20.0	0.0	5	0
Cárdenas-Mora	19.9	12.0	8.0	11	0
Tsimín	19.2	19.2	0.0	6	0
Ixtoc	18.4	18.4	0.0	9	0
Homol	18.3	9.5	8.8	6	0
Rabasa	17.4	12.4	5.0	43	8
Kambesah	17.3	17.3	0.0	4	0
Esah	17.3	0.0	17.3	0	2
Bellota	17.2	12.8	4.4	6	2
Takín	17.0	17.0	0.0	3	0
Abkatún	16.9	16.9	0.0	13	0
Bolontikú	16.7	16.7	0.0	2	0
Koban	16.5	10.1	6.5	2	2
Cuervito	16.0	5.7	10.3	90	54
Puerto Ceiba	15.9	14.7	1.3	18	1
Lum	15.7	11.2	4.6	3	3
Ogarrio	15.6	10.2	5.4	74	0
Valeriana	15.6	0.3	15.3	2	0
Bedel	15.4	11.7	3.7	15	6
Nejo	15.3	2.4	12.9	127	62
Paredón	15.2	15.2	0.0	3	0
Costero	14.6	14.6	0.0	11	0
Gasífero	14.3	12.2	2.2	28	6
Terra	13.4	12.4	1.0	12	2
Castarrical	13.2	6.5	6.8	3	2
Cibix	13.1	7.8	5.3	6	2
Cinco Presidentes	12.7	12.2	0.5	37	1
Caparroso-Pijije-Escuintle	11.3	11.3	0.0	14	0
Teca	11.3	0.0	11.3	2	5
Tupilco Profundo	11.2	11.2	0.0	17	0
Sen	10.5	10.5	0.0	13	0
Xikin	10.3	10.3	0.0	2	0
CNH-M3-MISIÓN/2018	9.5	0.0	9.5	9	n.a
Chinchorro	9.1	7.1	2.0	3	1
Nohoch	9.1	9.1	0.0	6	0
Tintal	9.0	9.0	0.0	8	0
Sunuapa	8.8	8.8	0.0	9	0
Cacalilao	8.8	1.6	7.3	53	97
Pánuco	8.6	1.4	7.2	50	120
Culebra	8.2	8.2	0.0	290	0
Camatl	7.8	1.3	6.4	1	4
Uech	7.7	7.7	0.0	2	0

Field	Reserves			Number of Producing Wells	Number of Undeveloped Locations[2]
	Proved[1]	Developed[1]	Undeveloped[1]		
	(in millions of barrels of oil equivalent)				
Chuc	7.5	7.5	0.0	7	0
Itta	7.4	6.7	0.8	4	1
Taratunich	7.4	7.4	0.0	3	0
Manik NW	7.4	7.4	0.0	3	0
Batsil	7.2	0.0	7.2	0	0
Tetl	7.1	7.1	0.0	3	0
Vinik	7.0	0.0	7.0	0	1
Chac	6.6	6.6	0.0	6	0
Racemosa	6.5	0.7	5.8	0	2
Cactus	6.5	6.5	0.0	10	0
Octli	6.4	6.4	0.0	5	0
Kab	6.3	6.3	0.0	4	0
Bagre	6.2	6.2	0.0	0	0
Jacinto	6.0	6.0	0.0	4	0
Total	7,172.7	4,189.4	2,983.2	3,961	4,007
Our proved reserves	7,426.5	4,405.3	3,021.2		
Percentage	96.6	95.1	98.7		

Note: Numbers may not total due to rounding.
n.a.: No data available as undeveloped reserves are located in areas shared with third-parties.
(1) Proved reserves, developed reserves and undeveloped reserves are expressed in millions of barrels of oil equivalent. To convert dry gas to barrels of oil equivalent, a factor of 5.201 thousand cubic feet of dry gas per barrel of oil equivalent is used.
(2) Undeveloped Locations refers to the number of geographic sites or locations where a well will be drilled to produce undeveloped proved reserves.
(3) Includes extraction assignments and temporary assignments.
(4) Includes the Cunduacán, Iride, Oxiacaque, Platanal and Samaria fields.
(5) These fields are part of Pemex Exploration and Production's first exploitation contract without partner, Ek-Balam.

Source: Pemex Exploration and Production.

Our RRR, for a given period is calculated by dividing the sum of proved reserves additions due to discoveries, developments, delineations and revisions by that period's total production. During 2021, we obtained 884.1 million barrels of oil equivalent of proved reserves, which represents an RRR of 105.1%, as compared to our RRR of 119.7% in 2020. We expect to continue obtaining an RRR of around 100%, as in recent years.

Our reserves production ratio, which is presented in terms of years, is calculated by dividing the estimated remaining reserves at the end of the relevant year by the total production of hydrocarbons for that year. As of December 31, 2021, this ratio was 8.8 years for proved reserves.

For more information, see Note 31 to our consolidated financial statements included herein.

Sales Prices and Production Costs

The following table sets forth our average sales price per unit of oil and gas produced and our average production cost per unit of production, in the aggregate and for each field containing 10% or more of our proved reserves.

Unit Sales Prices and Production Costs[1]

	Ku-Maloob-Zaap	Ayatsil[2]	Other Fields	All Fields
	(in U.S. dollars)			
Year ended December 31, 2021				
Average sales prices				
Crude oil, per barrel	$ 61.06	$ 54.60	$ 71.37	$ 66.06
Natural gas, per thousand cubic feet	$ 4.74	$ 4.03	$ 5.19	$ 5.16
Average production costs, per barrel of oil equivalent	$ 16.16	$ 16.33	$ 15.67	$ 15.84
Year ended December 31, 2020				
Average sales prices				
Crude oil, per barrel	$ 31.58	$ 29.53	$ 40.09	$ 35.47
Natural gas, per thousand cubic feet	$ 2.92	$ 2.50	$ 2.50	$ 2.54
Average production costs, per barrel of oil equivalent	$ 9.38	$ 6.28	$ 12.39	$ 11.15
Year ended December 31, 2019				
Average sales prices				
Crude oil, per barrel	$ 53.36	$ 50.75	$ 62.92	$ 57.13
Natural gas, per thousand cubic feet	$ 3.63	$ 3.13	$ 3.54	$ 3.55
Average production costs, per barrel of oil equivalent	$ 10.49	$ 9.02	$ 16.41	$ 14.06

(1) Average of sales prices as of the last day of each month of the year.
(2) Derived from the breakdown of the Ayatsil field, which was reported within Ku-Maloob-Zaap, the price vectors of the Ku-Maloob-Zaap column and other fields were updated in years 2019 and 2020.

Source: Pemex Exploration and Production

In 2021, our average production cost was U.S. $15.84 per barrel of oil equivalent, which represented an increase of 42.1%, as compared to our average production cost of U.S. $11.15 per barrel of oil equivalent in 2020. This increase resulted primarily from increase of royalties payments for the price of crude oil, and the higher expenses in repair and non-capitalized maintenance costs, supplies, chemicals, gas used for gas lifting, maintenance and operation of wells and related equipment and facilities.

We calculate and disclose our production costs pursuant to international practices, which are based on U.S. GAAP under ASC Topic 932. In accordance with ASC Topic 932, the production cost per barrel of oil equivalent is calculated by dividing total production expenses (in U.S. dollars) by total production of oil and gas (in barrels of oil equivalent) for the relevant period.

Our total production cost consists of all direct and indirect costs incurred to produce crude oil and gas, including costs associated with the operation and maintenance of wells and related equipment and facilities. In addition, it includes costs of labor to operate the wells and facilities, the costs of materials, supplies and fuel consumed, including gas used for gas lifting, nitrogen and other chemicals, repair and non-capitalized maintenance costs, and other costs, such as fees for general services, a labor fund for active personnel, corporate services, indirect overhead and applicable taxes and duties. However, it excludes non-cash expenses such as amortization of capitalized well expenses, the depreciation of fixed assets, expenses associated with the distribution and handling of oil and gas and other expenses that are related to exploration, development and drilling activities.

Crude Oil and Natural Gas Production

In 2021, we produced an average of 1,735.7 thousand barrels per day of crude oil, an increase of 2.9 % as compared to our average production of 1,686.3 thousand barrels per day of crude oil in 2020. The increase in 2021 resulted primarily from new fields Cheek, Itta, Koban, Mulach, Manik NW, Octli, Pokche, Tlacame, Tlamatini, Tetl, Xolotl, Yaxche, Tupilco Profundo, Quesqui, Cibix and Ixachi. Our average production of heavy crude oil decreased by 67.2 thousand barrels per day, or 6.3% less than the average daily production in 2020, primarily due to a drecrease in our drilling and maintenance activities and a decline in production at our fields, primarily at the Ku-Maloob-Zaap, and Samaria field. In 2021, the average production of light crude oil increase by 116.5 thousand barrels per day, or 19.0 %, as compared to 2020. The increase in light crude oil production was mainly because of an increase in production at new offshore field projects Cheek, Itta, Koban, Mulach, Manik NW, Octli, Pokche, Tlacame, Tlamatini, Tetl, Xolotl, Yaxche, and onshore field projects Tupilco Profundo, Quesqui, Cibix and Ixachi.

Crude oil can be classified by its sulfur content. “Sour” or heavy crude oil contains 3.4% or greater sulfur content by weight and “sweet” or light crude oil contains less than 1.0% sulfur content by weight. Most of our production is classified as sour or heavy crude oil.

Our exploration and production segment primarily produces four types of crude oil:

- Altamira, a heavy crude oil;
- Maya, a heavy crude oil;
- Istmo, a light crude oil; and
- Olmeca, an extra-light crude oil.

Most of our production consists of Istmo and Maya crude oil. In 2021, 58.0 % of our total production of crude oil consisted of heavy crude oil and 42.0 % consisted of light and extra-light crude oil. The Marine regions yield mostly heavy crude oil (68.5 % of these regions' production in 2021), although significant volumes of light and extra light crude oil are also produced there (31.5 % of these regions' production in 2021). The Southern region yields mainly light and extra-light crude oil (together, 92.8 % of this region's production in 2021, as well as lesser amounts of heavy crude oil (7.2 % of this region's production in 2021) and the Northern region yields both light and extra-light crude oil (47.2% of this region's production in 2021) and heavy crude oil (52.8 % of this region's production in 2021).

The most productive crude oil and natural gas fields in the Gulf of Mexico are located in the Ku-Maloob-Zaap, Litoral de Tabasco, Abkatún-Pol-Chuc and Cantarell business units in the Marine regions and the Samaria Luna and Bellota-Jujo business units in the Southern region. In particular, the Ku-Maloob-Zaap business unit was our most important crude oil producer in 2021, producing an average of 718.1 thousand barrels per day of crude oil in 2021, or 41.1% of our total crude oil production for the year, and 834.9 million cubic feet per day of natural gas, or 17.9 % of our total natural gas production for the year. Our second most important crude oil producer was Litoral de Tabasco which produced an average of 325.4 thousand barrels per day of crude oil in 2021, or 18.7 % of our total crude oil production for the year, and an average of 555.8 million cubic feet per day of natural gas, or 11.9 % of our total natural gas production for the year.

The following table sets forth our annual crude oil production rates by type of oil for the five years ended December 31, 2021.

Crude Oil Production

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in thousands of barrels per day)					(%)
Marine regions						
Heavy crude oil	937.2	976.1	982.7	996.1	978.0	-4.0
Light crude oil[1]	431.8	397.1	402.2	514.8	605.6	8.7
Total	1,369.0	1,373.2	1,384.8	1,510.9	1,583.6	-0.3
Southern region						
Heavy crude oil	19.5	32.8	36.2	25.8	16.9	-40.5
Light crude oil[1]	251.3	194.9	172.2	193.6	249.8	28.9
Total	270.8	227.8	208.4	219.4	266.7	18.9
Northern region						
Heavy crude oil	50.7	65.5	55.6	49.3	54.2	-22.6
Light crude oil[1]	45.2	19.8	34.9	43.0	43.8	128.3
Total	95.9	85.3	90.6	92.3	97.9	12.4
Total heavy crude oil	1,007.3	1,074.5	1,074.5	1,071.2	1,049.1	-6.3
Total light crude oil[1]	728.3	611.8	609.3	751.4	899.2	19.0
Total crude oil	**1,735.7**	**1,686.3**	**1,683.8**	**1,822.5**	**1,948.3**	**2.9**

Note: Numbers may not total due to rounding.
(1) Includes extra-light crude oil.

Source: Pemex Exploration and Production.

The following table sets forth our annual crude oil production by region and business unit for the five years ended December 31, 2021.

Crude Oil Production

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in thousands of barrels per day)					(%)
Marine regions						
Ku-Maloob-Zaap	718.1	784.3	842.7	874.7	858.0	-8.4
Litoral de Tabasco	325.4	258.2	198.8	291.1	345.8	26.0
Abkatún-Pol-Chuc	164.6	169.4	184.0	183.8	203.2	-2.8
Cantarell	160.9	161.2	159.3	161.2	176.0	-0.2
Total	1,369.0	1,373.2	1,384.8	1,510.9	1,583.6	-0.3
Southern region						
Bellota-Jujo	114.0	71.8	58.2	58.6	72.4	58.8
Samaria-Luna	87.5	86.3	82.1	86.5	99.9	1.4
Macuspana-Muspac	36.3	33.2	26.4	23.6	31.3	9.3
Cinco Presidentes	33.1	36.5	41.5	50.7	63.1	-9.3
Total	270.8	227.8	208.3	219.4	266.7	18.9
Northern region						
Poza Rica-Altamira	53.0	55.5	41.0	43.7	48.2	-4.5
Aceite Terciario del Golfo[1]	n.a.	n.a.	24.3	28.4	34.4	n.a.
Veracruz	41.9	28.4	22.3	17.6	15.3	47.5
Burgos	1.0	1.6	3.0	2.6	—	-37.5
Total	95.9	85.4	90.6	92.3	97.9	12.3
Total crude oil	**1,735.7**	**1,686.3**	**1,683.8**	**1,822.5**	**1,948.3**	**2.9**

Note: Numbers may not total due to rounding.

n.a. No data available due to the merger of the Aceite Terciario del Golfo business unit with the Poza Rica-Altamira business unit in 2019.

(1) Prior to July 1, 2019, Pemex Exploration and Production, as a result of organizational changes, merged the Aceite Terciario del Golfo business unit into the Poza Rica-Altamira business unit.

Source: Pemex Exploration and Production.

The Marine regions, which are comprised of the Northeastern Marine region and the Southwestern Marine region, are located on the continental shelf and its slope in the Gulf of Mexico. They cover a surface area of approximately 550,000 square kilometers, located entirely within Mexican territorial waters, along the coast of the states of Tabasco, Campeche, Yucatán, Quintana Roo and the southern coast of the state of Veracruz. In 2021, the average crude oil production from the 58 fields located in these regions was 1,369.0 thousand barrels per day.

The Southern region covers an area of approximately 392,000 square kilometers, including the states of Guerrero, Oaxaca, Chiapas, Tabasco, Yucatán, Quintana Roo, Campeche and Veracruz. In 2021, the average crude oil production from the 74 fields located in this region was 270.8 thousand barrels per day.

The Northern region, including its offshore area, is located on the continental shelf in the Gulf of Mexico along the coast of the state of Tamaulipas and the northern coast of the state of Veracruz. It covers an area of approximately 1.8 million square kilometers. Our production area in the onshore portion of this region is located in, among others, the states of Veracruz, Tamaulipas, Nuevo León, Coahuila, San Luis Potosí and Puebla; we also produce offshore on the continental shelf in the Gulf of Mexico. In 2021, the average crude oil production in the Northern region totaled 95.9 thousand barrels per day of crude oil, from the 191 oil fields in this region.

The following table sets forth our annual natural gas production by region and business unit for the five years ended December 31, 2021.

Natural Gas Production

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in millions of cubic feet per day)					(%)
Marine regions						
Cantarell	1,055.0	1,163.6	1,245.7	1,151.1	1,133.4	-9.3
Ku-Maloob-Zaap	834.9	871.4	785.8	693.5	552.3	-4.2
Litoral de Tabasco	555.8	626.4	713.1	798.0	882.3	-11.3
Abkatún-Pol-Chuc	402.5	362.3	300.5	288.2	319.5	11.1
Total	2,848.2	3,023.7	3,045.2	2,930.8	2,887.6	-5.8
Southern region						
Samaria-Luna	298.7	331.6	371.7	381.0	426.9	-9.9
Macuspana-Muspac	268.9	309.6	269.3	249.2	291.6	-13.1
Bellota-Jujo	325.1	162.9	128.1	147.4	183.3	99.6
Cinco Presidentes	43.9	59.6	74.3	90.9	109.1	-26.3
Total	936.6	863.7	843.4	868.5	1,011.0	8.4
Northern region						
Burgos	445.2	522.2	567.6	603.9	699.2	-14.7
Veracruz	332.2	224.4	208.1	217.3	263.5	48.0
Aceite Terciario del Golfo [(1)]	n.a.	n.a.	69.4	92.2	118.5	n.a.
Poza Rica-Altamira	108.2	127.6	82.5	90.3	88.2	-15.2
Total	885.7	874.1	927.6	1,003.7	1,169.4	1.3
Total natural gas	**4,670.5**	**4,761.6**	**4,816.2**	**4,803.0**	**5,068.0**	**-1.9**

Note: Numbers may not total due to rounding.

n.a. No data available due to the merger of the Aceite Terciario del Golfo business unit with the Poza Rica-Altamira business unit in 2019.

(1) Prior to July 1, 2019, Pemex Exploration and Production, as a result of organizational changes, merged the Aceite Terciario del Golfo business unit into the Poza Rica-Altamira business unit.

Source: Pemex Exploration and Production.

In 2021, the Marine regions produced 2,848.2 million cubic feet per day of natural gas, or 61.0 % of our total natural gas production, a decrease of 5.8 % as compared to the regions' 2020 production of 3,023.7 million cubic feet per day. In 2021, the Southern region produced 936.6 million cubic feet per day of natural gas, or 20.1 % of our total natural gas production, an increase of 8.4 % as compared to the region's 2020 production of 863.7 million cubic feet per day. In 2021, the Northern region produced 885.7 million cubic feet per day of natural gas, or 19.0 % of our total natural gas production, an increase of 1.3 % as compared to the region's 2020 production of 874.1 million cubic feet per day.

Our average natural gas production decreased by 1.9% in 2021, from 4,761.6 million cubic feet per day in 2020 to 4,670.5 million cubic feet per day in 2021. Natural gas production associated with crude oil production accounted for 78.2% of total natural gas production in 2021, with the remainder of natural gas production consisting of extraction from fields holding natural gas reserves. As of December 31, 2021, 151 of our 323 gas producing fields, or 46.7%, produced non-associated gas. These non-associated gas fields accounted for 21.8 % of all of our natural gas production in 2021.

Investments in Exploration and Production

In nominal peso terms, our capital expenditures for exploration and production were Ps. 134,369 million in 2021, as compared to Ps. 107,149 million in 2020, representing an increase of 25.4%. Of our total capital expenditures, (i) Ps. 17,753 million was directed to the Ku-Maloob-Zaap fields, (ii) Ps. 10,595 million was directed to the Integral Yaxché, (iii) Ps. 8,498 million was directed to the Ek-Balam, (iv) Ps. 5,316 million was directed to the Chuc, (v) Ps. 4,866 million was directed to the Cantarell, (vi) Ps. 3,882 million was directed to the Cuenca de Veracruz, (vii) Ps. 1,887 million was directed to the Ogarrio-Sánchez Magallanes, (viii) Ps. 1,606 million was directed to the Cactus-Sitio Grande, (ix) Ps. 1,550 million was directed to the El Golpe-Puerto Ceiba, and (x) Ps. 1,310 million was directed to the Delta del Grijalva. During 2021, expenditures for these ten projects amounted Ps. 57,263 million, which represented 42.6% of our capital expenditures in exploration and production. The remaining 57.4% amounted to

Ps. 77,106 million in nominal terms, which was directed to the 14 remaining projects, as well as to other exploratory projects, 22 new development projects and drilling and services projects.

Exploration and Production Capital Expenditures and Budget

For 2022, our total capital expenditures budget is Ps. 208,852 million, as compared to Ps. 134,369 million of capital expenditures made in 2021, representing an increase of 55.4%, largely with a view of reaching our objectives of stopping and reversing the decline in our reserves and production, and accelerating the development of discovered fields. The 2022 budget includes Ps. 90,001 for all of the 23 ongoing strategic exploration and production projects, an additional Ps. 45,014 million to be allocated to other exploratory projects, Ps. 72,439 million to be allocated to other development projects and Ps. 1,398 million for other drilling and services activities. Of our 2022 capital expenditures budget, Ps. 156,522 million, or 74.9%, is to be allocated to projects relating to field development and pipelines and Ps. 52,330 million, or 25.1%, of the total budget, to exploration activities.

The 2022 exploration and production budget includes (i) Ps. 28,492 million for investments in the Ku-Maloob-Zaap project, (ii) Ps. 10,578 million for the Ek-Balam project, (iii) Ps. 8,346 million for the Cuenca de Veracruz project, (iv) Ps. 5,548 million for the Integral Yaxché project, (v) Ps. 4,919 million for the Ogarrio-Sánchez Magallanes project, (vi) Ps. 4,018 million for the Jujo-Tecominoacán project, (vii) Ps. 4,000 million for the Chuc project, (viii) Ps. 3,413 million for the Cantarell project, (ix) Ps. 3,231 million for Antonio J. Bermúdez project, and (x) Ps. 2,534 million for the Tsimin-Xux project. These 10 projects totaled Ps. 75,079 million and Ps. 133,773 million for the remaining projects, as well as for other exploratory and development projects and drilling activities.

Exploration and Production Investment Trends

In 2021, we invested Ps. 32,241 million in nominal terms, or 24.0% of the total capital expenditures of our exploration and production segment, in exploration activities. This represented a 44.6% increase from the Ps. 22,298 million invested in exploration activities in 2020. In 2021, we invested Ps. 102,128 million in nominal terms, or 76.0% of our total capital expenditures in development activities. This represented a 20.4% increase from the Ps. 84,851 million invested in development activities in 2020.

In 2022, we have budgeted Ps. 52,330 million, or 25.1% of our total capital expenditures budget for the exploration activities of our exploration and production segment. This represents a 62.3% increase in nominal terms from the amount invested in exploration activities in 2021. This increase is mainly due to our strategy to increase the incorporation of reserves, as well as our commitment to pay accrued amounts in 2021. For development activities in 2022, we have budgeted Ps. 156,522 million, or 74.9% of our total capital expenditures. This represents a 53.3% increase in nominal terms as compared to the amount that we invested in development activities in 2021.

Our projected exploration and development capital expenditures correspond to the areas assigned to us through bidding rounds, which represent the areas in which we are exploring, operating or have an interest in developing based on our operational capabilities. The SENER granted us the right to explore and develop these areas with the aim of maintaining our production levels in the short term, while providing us with sufficient exploration opportunities to increase our production in the future. Given that a significant number of exploration areas are reserved by the Mexican Government for potential future competitive bidding rounds, we intend to carry out our strategy of increasing production and improving our RRR over time by entering into strategic joint ventures with other oil and gas companies. During 2021, in accordance with our Business Plan 2021-2025, we evaluated the use of Integrated Exploration and Extraction Services Contracts (CSIEEs) as a replacement for farm-outs to foster private sector participation in our operations. The CSIEE model seeks to increase production by offering an incentive based on the production received and sharing the risk involved in operations according to the terms of each contract. Each CSIEE contract has a term of between 15 and 25 years. CSIEE contracts are expected to replace farm-outs as a vehicle for private sector participation, although existing farm-outs will remain for the duration of their respective terms. However, as of December 31, 2021, no CSIEE has been entered into. Over time, the allocation of our capital expenditures budget may change due to several factors, including the results of potential subsequent bidding rounds in which we participate. For more information regarding CSIEEs, see "Item 4 – Exploration and Production – Crude Oil Distribution – Farm-outs and CSIEEs."

The capital expenditures of our exploration and production segment have constituted 83.2% or more of our total capital expenditures in each of the last three years. In 2022, the budgeted capital expenditures for our exploration and production segment constitute 92.0% of our total capital expenditures.

The following tables sets forth our capital expenditures, excluding non-capitalizable maintenance, related to exploration and development for each of the three years ended December 31, 2021, and the budget for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to capital expenditure amounts included in our consolidated financial statements prepared in accordance with IFRS.

Exploration and Development Capital Expenditures

	Year ended December 31,[1]			Budget
	2021	2020	2019[2]	2022[3]
	(in millions of pesos) [4]			
Exploration	Ps. 32,241	Ps. 22,298	Ps. 21,992	Ps. 52,330
Development	102,128	84,851	76,771	156,522
Total	**Ps. 134,369**	**Ps. 107,149**	**Ps. 98,763**	**Ps. 208,852**

Note: Numbers may not total due to rounding.

(1) Amounts based on cash basis method of accounting.

(2) Figures include our drilling and services line of business beginning July 1, 2019. Prior to July 1, 2019, Pemex Drilling and Services operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Drilling and Services was merged into Pemex Exploration and Production.

(3) Amended budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.

(4) Figures are stated in nominal pesos.

Source: Pemex Exploration and Production

Investments and Production by Project

We conduct exploration, production and development activities in fields throughout Mexico. Our ten projects with more capital expenditures in 2021 are: Ku-Maloob-Zaap, Integral Yaxché, Ek-Balam, Chuc, Cantarell, Cuenca de Veracruz, Ogarrio-Sánchez Magallanes, Cactus-Sitio Grande, El Golpe-Puerto Ceiba and Delta del Grijalva. The detail of investments in Pemex Exploration and Production projects are described below.

Exploration and Production's Capital Expenditures

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Exploration and Production				
Ku-Maloob-Zaap	Ps. 17,753	Ps. 18,541	Ps. 17,560	Ps. 28,492
Integral Yaxché	10,595	6,239	5,592	5,548
Ek-Balam	8,498	8,045	8,888	10,578
Chuc	5,316	5,833	10,711	4,000
Cantarell	4,866	2,637	2,342	3,413
Cuenca de Veracruz	3,882	3,112	2,110	8,346
Ogarrio-Sánchez Magallanes	1,887	1,235	1,092	4,919
Cactus-Sitio Grande	1,606	1,605	1,377	2,424
El Golpe-Puerto Ceiba	1,550	1,661	902	2,182
Delta del Grijalva	1,310	1,235	958	1,874
Antonio J. Bermúdez	1,267	2,434	3,166	3,231
Bellota-Chinchorro	1,186	918	1,646	1,857
Ixtal-Manik	988	730	1,922	492
Aceite Terciario del Golfo	780	681	758	1,559
Jujo-Tecominoacán	776	241	405	4,018
Integral Poza Rica	723	437	491	988

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Tsimin-Xux	707	1,352	803	2,534
Tamaulipas-Constituciones	692	2,600	1,232	632
Burgos	587	535	243	1,453
Crudo Ligero Marino	387	1,002	3,715	1,008
Lakach	347	51	56	296
Cuenca de Macuspana	51	93	125	56
Costero Terrestre	13	57	83	101
Arenque	1	2	40	—
Other Exploratory Projects	28,650	19,779	20,550	45,014
Other Development Projects	38,731	24,827	11,324	72,439
Ixachi	5,379	1,592	436	8,722
Quesqui	4,138	229	—	15,062
Koban	3,361	1,208	174	2,797
Tetl	2,590	1,206	728	812
Tlamatini	2,433	260	—	2,380
Octli	2,384	1,763	505	329
Manik NW	2,384	932	149	792
Tlacame	2,259	2,736	30	1,255
Itta	2,219	127	—	3,273
Mulach	1,937	2,952	64	2,665
Uchbal	1,471	90	0	4,307
Hok	1,351	1,563	40	158
Cheek	1,242	2,182	44	505
Teekit Profundo	1,165	245	566	3,564
Teca	1,140	—	—	6,879
Cahua	974	3,447	66	50
Suuk	831	808	637	3,102
Xikin	534	2,857	6,210	292
Cibix	458	38	—	987
Pokche	245	—	—	10,172
Esah	233	591	1,675	2,325
Chocol	1	—	—	—
Racemosa	—	—	—	1,768
Kayab	—	—	—	176
Pit	—	—	—	16
Paki	—	—	—	50
Drilling and Services[4]	1,220	1,270	672	1,398
Total	**Ps. 134,369**	**Ps. 107,149**	**Ps. 98,763**	**Ps. 208,852**

Notes: Numbers may not total due to rounding.

(1) Amounts based on cash basis method of accounting.

(2) Amended budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.

(3) Figures are stated in nominal pesos.

(4) Figures include our drilling and services line of business beginning July 1, 2019. Prior to July 1, 2019, Pemex Drilling and Services operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Drilling and Services was merged into Pemex Exploration and Production.

Source: Petróleos Mexicanos.

Ku-Maloob-Zaap Project. The Ku-Maloob-Zaap project was our most important producer of heavy crude oil and plays an important part in the production of the Maya crude oil mix. It is the most important project in Mexico in terms of total proved hydrocarbon reserves and crude oil production. It is composed of the Ayatsil, Bacab, Lum, Ku Maloob, Tekel, Utsil and Zaap fields, and extends over an area of 305.7 square kilometers. As of December 31, 2021, there were a total of 313 wells completed, 212 of

which were producing. The project produced an average of 718.1 thousand barrels per day of crude oil, 41.4% of our total production, and 834.9 million cubic feet per day of natural gas in 2021. As of December 31, 2021, cumulative production was 6.6 billion barrels of crude oil and 3.8 trillion cubic feet of natural gas. As of December 31, 2021, proved hydrocarbon reserves totaled 2.0 billion barrels of crude oil and 0.794 trillion cubic feet of natural gas. Total proved reserves were 2.2 billion barrels of oil equivalent, of which 1.5 billion barrels of oil equivalent were proved developed reserves.

In nominal peso terms, our exploration and production segment's capital expenditures for this project were Ps. 18,541 million in 2020 and Ps. 17,753 million in 2021. Our total accumulated capital expenditures for the Ku-Maloob-Zaap project were U.S. $28.4 billion as of December 31, 2021. For 2022, we expect our capital expenditures for this project will total Ps. 28,492 million.

In 2021, we paid U.S. $41.0 million to acquire 106.2 billion cubic feet of nitrogen for the pressure maintenance project in the fifth module of the Cantarell nitrogen cryogenic plant. For 2022, we expect to spend U.S. $42.2 million to acquire 103.2 billion cubic feet of nitrogen for injection into the Ku-Maloob-Zaap fields.

Tsimín-Xux Project. This project consists of the Tsimín and Xux fields, which include volatile oil and gas condensate reservoirs in the shallow waters of the Gulf of Mexico. The Tsimín field is located 62 kilometers from the Dos Bocas Marine Terminal in Paraíso, Tabasco, while the Xux field is located on the continental shelf of the Gulf of Mexico, approximately ten kilometers off the coast of Tabasco. During 2021, no new wells were completed at the Xux or Tsimín fields. During 2021, average daily production at the TsimínXux project totaled 40.4 thousand barrels of crude oil and 232.6 million cubic feet of natural gas. During 2021, the sales prices of the light and extralight crude oil produced at these fields averaged U.S. $75.26 per barrel, making this one of our most important projects in terms of revenue generation.

As of December 31, 2021, cumulative production totaled 0.2 billion barrels of crude oil and 1.3 trillion cubic feet of natural gas. Total proved reserves were 45.5 million barrels of oil equivalent, of which all were proved developed reserves.

In nominal peso terms, our exploration and production segment's capital expenditures for the Tsimín-Xux project were Ps. 1,352 million in 2020 and Ps. 707 million in 2021. Our total accumulated capital expenditures for the Tsimín-Xux project were U.S. $324.5 million as of December 31, 2021. For 2022, we expect our capital expenditures for this project will total Ps. 2,534 million.

Chuc Project. The Chuc project is the third largest producer of light crude oil in the Southwestern Marine region, and includes the operation and maintenance of the PolA facility and water injection complexes. This project covers an area of 213 square kilometers. The fields of this project are located on the continental shelf of the Gulf of Mexico, off the coast of the states of Tabasco and Campeche, at a depth of between the 20 and 100meter isobaths, approximately 132 kilometers from the Dos Bocas Marine Terminal in Paraíso, Tabasco, and 79 kilometers northeast of Ciudad del Carmen, Campeche. The fields in the project include Abkatún, Batab, Caan, Ché, Chuc, Chuhuk, Etkal, Homol, Kanaab, Kuil, Onel, Pol, Taratunich and Tumut. As of December 31, 2021, 130 wells had been completed, of which 70 were producing. During 2021, average production totaled 113.3 thousand barrels per day of crude oil and 344.3 million cubic feet per day of natural gas. As of December 31, 2021, cumulative production totaled 6.1 billion barrels of crude oil and 7.1 trillion cubic feet of natural gas. As of December 31, 2021, proved hydrocarbon reserves totaled 100.2 million barrels of oil and 424.2 billion cubic feet of natural gas, or 180.8 million barrels of oil equivalent. As of December 31, 2021, total proved developed reserves were 156.1 million barrels of oil equivalent.

In nominal peso terms, our exploration and production segment's capital expenditures for the Chuc project were Ps. 5,833 million in 2020 and Ps. 5,316 million in 2021. Our total accumulated capital expenditures for the Chuc project were U.S. $8.3 billion as of December 31, 2021. For 2022, we expect our capital expenditures for this project will total Ps. 4,000 million.

Cantarell Project. The Cantarell project is located on the continental shelf of the Gulf of Mexico. It consists of the Akal, Chac, Ixtoc, Kambesah, Kutz, Nohoch, Sihil and Takin fields, which extend over an area of 294.4 square kilometers. As of December 31, 2021, there was a total of 569 wells drilled in the Cantarell project, 117 of which were producing. During 2021, the Cantarell project, was the fourth most important producer of crude oil in Mexico, averaging 88.0 thousand barrels per day of crude oil. This was 9.6% less than 2020 production, as a result of the decline of crude oil reserves remaining in these fields. Natural gas production from the Cantarell project during 2021 averaged 1,037.7 million cubic feet per day. This was 9.6% less than the 2020 average natural gas production.

As of December 31, 2021, cumulative production of the Cantarell project was 14.4 billion barrels of crude oil and 11.4 trillion cubic feet of natural gas As of December 31, 2021, proved oil and gas reserves of the Cantarell project totaled 577.3 million barrels of crude oil and 702.9 billion cubic feet of natural gas. As of December 31, 2021, total proved reserves were 683.8 million barrels of oil equivalent, of which 683.8 million barrels were proved developed reserves.

The Akal field, which is the most important field in the Cantarell project, averaged 36.6 thousand barrels per day of crude oil production during 2021. This was 10.8% less than the average production in 2020, which was 41.0 thousand barrels per day.

In nominal peso terms, our exploration and production segment's capital expenditures for the Cantarell project totaled Ps. 2,637 million in 2020 and Ps. 4,866 million in 2021. Our total accumulated capital expenditures for the Cantarell project were U.S. $42.0 billion as of December 31, 2021. For 2022, we expect our capital expenditures for this project will total Ps. 3,413 million.

On October 10, 1997, we awarded a build-own-operate contract for a nitrogen cryogenic plant at the Cantarell project to a consortium formed by BOC Holdings, Linde, Marubeni, West Coast Energy and ICA Fluor Daniel. Under this contract, the consortium is responsible for the financing, design, construction and operation of the plant. The plant began operations in 2000 and cost Ps. 10,131 million. Pursuant to the terms of the agreement, Pemex Exploration and Production has the right to acquire the nitrogen plant in the case of a default by the consortium. Pemex Exploration and Production has the obligation to acquire the nitrogen plant if it defaults under the contract. Under the terms of the contract, Pemex Exploration and Production committed to purchasing 1.2 billion cubic feet per day of nitrogen from the consortium and to continue to supply service through June 2027.

During 2021, we paid U.S. $196.3 million under this contract for an approximate total volume of 416.9 billion cubic feet of nitrogen, which was injected into the Cantarell fields. In 2022, our exploration and production segment expects to pay U.S. $194.8 million under this contract for an approximate total volume of 407.4 billion cubic feet of nitrogen to be injected into the fields.

Crudo Ligero Marino Project. The Crudo Ligero Marino Project is located on the continental shelf in the Gulf of Mexico, across the coasts of the states of Tabasco and Campeche, about 75 kilometers from the Dos Bocas Marine Terminal in Paraíso and 89 kilometers northwest from Ciudad del Carmen, Campeche. The main objectives for the Crudo Ligero Marino project during the years 2019 to 2035 are to continue constructing one marine structure, in addition to the marine structure completed during 2014, drill additional wells, implement secondary recovery, as well as intervention, optimization and maintenance techniques to its facilities, particularly in the Sinan, Kab and Kax fields. As of December 31, 2021, a total of 102 wells had been completed at this project, of which 28 were producing. During 2021, average daily production totaled 39.5 thousand barrels of crude oil and 125.3 million cubic feet of natural gas. As of December 31, 2021, cumulative production was 955.5 million barrels of crude oil and 2,765.3 billion cubic feet of natural gas. Proved oil and gas reserves totaled 47.8 million barrels of crude oil and 167.2 billion cubic feet of natural gas. Total proved reserves were 79.6 million barrels of oil equivalent, of which 79.6 million barrels were proved developed reserves.

In nominal peso terms, our exploration and production segment's capital expenditures for the Crudo Ligero Marino project totaled Ps. 1,002 million in 2020 and Ps. 387 million in 2021. Our total accumulated capital expenditures for the Crudo Ligero Marino project were U.S. $721.7 million as of December 31, 2021. For 2022, we expect our capital expenditures for this project will total Ps. 1,008 million.

Integral Yaxché Project. The Integral Yaxché project is located in shallow waters over the continental shelf in the Gulf of Mexico, off the coasts of the states of Tabasco and Campeche. The project is at a depth of between the 10- and 50-meter isobaths, approximately 14 kilometers from the Dos Bocas Maritime Terminal in Paraíso, Tabasco and 154 kilometers to the southwest of Ciudad del Carmen, Campeche. During 2021, average daily production at the Integral Yaxché project totaled 137.8 thousand barrels per day of crude oil and 101.3 million cubic feet per day of natural gas. We expect this project to experience an increase in certificated reserves for 2021 due to the maintenance of proper well pressure and improved production results.

As of December 31, 2021, cumulative production totaled 503.3 billion barrels of crude oil and 343.8 trillion cubic feet of natural gas. Proved oil and gas reserves totaled 109.2 million barrels of crude oil and 68.3 billion cubic feet of natural gas. Total proved reserves were 117.6 million barrels of oil equivalent, of which 117.6 million barrels of oil equivalent were proved developed reserves.

In nominal peso terms, our capital expenditures for the Integral Yaxché project were Ps. 6,239 million in 2020 and Ps. 10,595 million in 2021. Our total accumulated capital expenditures for the Integral Yaxché project were U.S. $5.5 billion as of December 31, 2021. For 2022, we expect capital expenditures for this project will total Ps. 5,548 million.

Ogarrio-Sánchez Magallanes Project. The Ogarrio-Sánchez Magallanes project is composed of 16 crude oil and natural gas producing fields and forms part of the Cinco Presidentes business unit. This project is located between the state borders of Veracruz and Tabasco and covers an area of 10,820 square kilometers. From a geological standpoint, this project pertains to the Isthmus Saline basin, specifically the southeastern basins at the Tertiary level. The Ogarrio-Sánchez Magallanes project is geographically bounded by the Gulf of Mexico to the north, the geological folds of the Sierra Madre of Chiapas to the south, the Tertiary basin of Veracruz to the west and the Comalcalco Tertiary basin to the east. The primary objective of this project is to increase production levels through the drilling of development wells and infill wells, which are drilled between producing wells to more efficiently recover oil and gas reserves, the execution of workovers of wells and the implementation of secondary and enhanced oil recovery processes. In addition,

we aim to optimize the infrastructure of this project in order to counteract the decreases in production levels that result from the natural depletion of its reservoirs.

As of December 31, 2021, the Ogarrio-Sánchez Magallanes project had 249 producing wells, 2 new wells were completed during 2021. Average daily production totaled 30.5 thousand barrels of crude oil and 36.3 million cubic feet of natural gas during 2021. As of December 31, 2021, cumulative production was 1.3 billion barrels of crude oil and 2.0 trillion cubic feet of natural gas. Proved hydrocarbon reserves totaled 62.2 million barrels of crude oil and 126.8 billion cubic feet of natural gas. Total proved reserves were 83.3 million barrels of oil equivalent, of which 63.6 million barrels were proved developed reserves.

In nominal peso terms, our capital expenditures for the Ogarrio-Sánchez Magallanes project were Ps. 1,235 million in 2020 and Ps. 1,887 million in 2021. Our total accumulated capital expenditures for the Ogarrio-Sánchez Magallanes project were U.S. $352.0 million as of December 31, 2021. For 2022, we expect capital expenditures for this project will total Ps. 4,919 million.

Antonio J. Bermúdez Project. The Antonio J. Bermúdez project is designed to accelerate reserves recovery, as well as increase the recovery factor, by drilling additional wells and implementing a system of pressure maintenance through nitrogen injection. It consists of the Samaria, Cunduacán, Oxiacaque, Iride and Platanal fields, and covers an area of 163 square kilometers. As of December 31, 2021, a total of 885 wells had been completed, of which 185 were producing. During 2021, the project produced an average of 28.8 thousand barrels per day of crude oil and 81.4 million cubic feet per day of natural gas. As of December 31, 2021, cumulative production was 3.0 billion barrels of crude oil and 4.9 trillion cubic feet of natural gas. As of December 31, 2021, proved hydrocarbon reserves in these fields totaled 84.5 million barrels of crude oil and 91.0 billion cubic feet of natural gas. As of December 31, 2021, total proved reserves were 104.4 million barrels of oil equivalent, of which 65.3 million were proved developed reserves.

In nominal peso terms, our exploration and production segment's capital expenditures for the Antonio J. Bermúdez project were Ps 2,434 million in 2020 and Ps. 1,267 million in 2021. Our total accumulated capital expenditures for the Antonio J. Bermúdez project were U.S. $9.6 billion as of December 31, 2021. For 2022, we expect capital expenditures for this project will total Ps. 3,231 million.

Burgos Project. The Burgos project is the largest producer of non-associated gas in Mexico. The purpose of the Burgos project is to enable us to meet increasing domestic demand for natural gas. The fields in Burgos accounted for 9.5% of our total natural gas production in 2021. The project is located in northeastern Mexico.

During 2021, the Burgos project produced an average of 444.5 million cubic feet per day of natural gas. In 2021, 10 new wells were completed at the Burgos project, bringing our total completed wells drilled to 8,014 and 2,352 of which were producing. The most important fields are the Nejo, Arcabuz, Culebra, Cuitláhuac, Cuervito, Velero and Santa Anita fields, which together produced 47.9% of the total production of the Burgos project in 2021.

Main Fields of the Burgos Project[(1)]
(as of December 31, 2021)

	Nejo	Arcabuz-Culebra	Cuitláhuac	Velero	Cuervito	Santa Anita
Wells completed	436	979	448	221	139	84
Producing wells	127	457	191	132	91	60
2020 production of natural gas (million cubic feet per day)	31.9	68.0	49.2	26.2	18.7	18.8
Cumulative production of natural gas (billion cubic feet)	659.8	2,180.4	877.3	388.9	232.9	294.3
Proved reserves of natural gas (billion cubic feet)	73.5	63.9	151.6	35.5	97.3	6.6
Proved developed reserves	12.7	63.9	98.7	35.5	34.8	6.6
Proved undeveloped reserves	60.8	0	52.9	0	62.5	0

(1) This table considers natural gas production and reserves corresponding exclusively to Pemex Exploration and Production.
Source: Pemex Exploration and Production.

During 2021, proved reserves decreased by 53.4 million barrels of oil equivalent, from 171.9 million barrels of oil equivalent in 2020 to 118.5 million barrels of oil equivalent in 2021, Due to the decrease in production of certain fields in the Burgos project as well as the movement of some proven undeveloped locations to probable locations.

In nominal peso terms, our exploration and production segment's capital expenditures (including capital expenditures made pursuant to Financed Public Works Contracts, or FPWCs) for the Burgos project were Ps. 535 million in 2020 and Ps. 587 million in

2021. Our total accumulated capital expenditures for the Burgos project were U.S. $20.6 billion as of December 31, 2021. For 2022, we expect capital expenditures for this project will total Ps. 1,453 million.

Aceite Terciario del Golfo Project (ATG Project, formerly Paleocanal de Chicontepec). The ATG project, is located in the Northern region and covers an area of 4,243 square kilometers. This project comprises 29 fields, which are divided among eight sectors. As of December 31, 2021, there was a total of 4,707 wells completed, of which 1,461 were producing. The project produced an average of 19.1 thousand barrels per day of crude oil in 2021 as compared to 20.6 thousand barrels per day of crude oil in 2020, which represents a 6.9 decrease, and 50.6 million cubic feet per day of natural gas in 2021 as compared to 56.5 million cubic feet of natural gas per day in 2020, which represents a 10.4% decrease. The decrease in crude oil and natural gas production was primarily due to the decline in pressure in certain reservoirs. As of December 31, 2021, cumulative production was 348.2 million barrels of crude oil and 766.4 billion cubic feet of natural gas. As of December 31, 2021, proved reserves totaled 520.0 million barrels of crude oil and 927.3 billion cubic feet of natural gas. Total proved hydrocarbon reserves were 653.0 million barrels of oil equivalent, of which 114.1 million barrels of oil equivalent were proved developed reserves.

During 2021, field development activities at the project included the drilling of 19 new wells and the completion of 19 wells, all 19 of which were classified as producing, reflecting a 100% success rate. As of December 31, 2021, 93.7% of the total producing wells were operating with artificial systems such as mechanical, pneumatic, hydraulic and electric pumping, while the remaining 6.3% were "flowing wells" that are classified accordingly because they did not require any means of artificial lift.

In nominal peso terms, our exploration and production segment's capital expenditures for the ATG project were Ps. 681 million in 2020 and Ps. 780 million in 2021. Our total accumulated capital expenditures for the ATG project were U.S. $13.3 billion as of December 31, 2021. For 2022, we expect capital expenditures for this project will total Ps. 1,559 million.

Crude Oil Sales

During 2021, domestic consumption of crude oil amounted to 716.9 thousand barrels per day, which represented 41.3% of our total crude oil production. Through PMI's activities, we sold the remainder of our crude oil production abroad. Maya crude oil accounted for 78.2% of exported crude oil volume sold by PMI in 2021. See "—Business Overview—International Trading" in this Item 4.

The following table sets forth crude oil distribution for the past five years.

Crude Oil Distribution

	At December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in thousands of barrels per day)					(%)
Production	1,735.7	1,686.3	1,683.8	1,822.5	1,948.3	2.9
Distribution						
Refineries	716.9	601.7	576.8	606.4	769.0	19.1
Export terminals	1,017.0	1,124.4	1,102.5	1,186.9	1,167.8	(9.6)
Total	1,733.9	1,726.1	1,679.3	1,793.3	1,936.7	0.5
Statistical differences in stock measurements[(1)]	1.8	(39.8)	4.5	29.2	11.6	(104.5)

Note: Numbers may not total due to rounding.

(1) Includes measurement inconsistencies, shrinkage and leakage, naphthas and condensates added to crude oil.

Source: Pemex Exploration and Production.

Differences between the volume of crude oil measured at the wellhead and the volume distributed reflect customary adjustments due to, among other things, the conditioning process and decreases due to evaporation and dehydration. In the past, we identified increases in the difference between oil production and volumes of crude oil distribution. Therefore, based on an analysis carried out in coordination with the CNH, we implemented several corrective actions to improve our measurement methodology, balance sheets and management system, including continuous well monitoring, calibration of measurement systems and installation of additional dehydration systems. Additionally, crude oil barrels undergo a stabilization process in preparation for export, which involves certification by us, the buyer and a third party to verify that the contents meet international standards, assuring that barrels do not contain more than 0.5% water.

Gas Flaring

The flaring of produced gas, which consists of the burning off of surplus combustible vapors from a well, usually occurs as a result of operational adjustments to carry out maintenance of production facilities, and in some cases is due to limited capacity to handle, process or transport natural gas. In addition, the flaring of produced gas is usually used as a safety measure to relieve high gas pressure, as a result of the interruption of processing due to separation, handling and transportation.

The flaring of gas is considered the most significant atmospheric emission from offshore oil and gas facilities. In 2020, the flaring of natural gas represented 10.8% of total natural gas production, compared to 4.8% of total natural gas production. In 2021 this represented the 12.1% of total natural gas production, compared to 10.8% of total natural gas production in 2020. The increase in gas flaring in 2021, was primarily due to an event which occurred at E-Ku-A2 platform, causing damage to the compression equipment resulting in a decrease in handling capacity of natural gas, as well as the lack of infrastructure to transport the Quesqui field production and infrastructure to process the Ixachi field gas.

In the last quarter of 2021 we implemented certain actions intended to significantly reduce gas flaring, including the restoration of damaged compression equipment from the E-Ku-A2 event, and the incorporation of new Quesqui field infrastructure.

Pipelines

The crude oil and natural gas pipeline network owned by our exploration and production segment connects crude oil and natural gas producing centers with refineries and petrochemical plants. At the end of 2021, this pipeline network consisted of approximately 36,400 kilometers of pipelines, of which 2,060 kilometers were located in the Northeast Marine region, 1,508 kilometers were located in the Southeast Marine region, 8,293 kilometers were located in the Southern region, 24,538 kilometers were located in the Northern region. For a description of products transported by the pipeline network, see "—Business Overview—Logistics" in this Item 4.

Integrated Exploration and Production Contracts, Financed Public Works Contracts (FPWCs) and Integrated Exploration and Extraction Services Contracts (CSIEEs)

Our FPWC program, previously known as the Multiple Services Contracts program, was first announced in December 2001. The objective of the program was to provide a contractual framework that promotes efficient execution of public works in order to increase Mexico's oil and gas production. These were contracts based on unit prices that aggregate a number of different services into a single contract. Under the FPWC framework, Pemex Exploration and Production retains entitlements for all oil and gas produced as well as works performed under each FPWC.

Our Integrated E&P Contracts program was established as part of reforms to the Mexican energy sector enacted in 2008. The objective of these contracts was to increase our execution and production capabilities. The oil and gas reserves located in and extracted from the areas to which we have a legal right, continue to be owned exclusively by the Mexican Government. Under this program, payments to the contractors were made on a per-barrel basis, plus recovery costs, not exceeding our cash flow from the block.

We may amend our Integrated E&P Contracts and FPWCs in order to align these contracts with the contractual framework established under the Hydrocarbons Law. As part of this reform, existing Integrated E&P Contracts or FPWCs may be migrated into a contract for exploration and extraction upon agreement by the contract parties to the technical guidelines established by the SENER (after seeking our favorable opinion) and the financial terms determined by the Ministry of Finance and Public Credit. Upon approval by the contract parties, the existing Integrated E&P Contract or FPWC will be terminated and be replaced by the new contract for exploration and extraction without the need for a bidding process. If the contract parties do not agree to the proposed technical guidelines and contractual and financial terms, the original Integrated E&P Contract or FPWC remains in effect.

As of the date of this annual report, we have migrated three Integrated E&P Contracts to contracts for exploration and extraction:

- On December 18, 2017, the Integrated E&P Contract governing the Santuario and El Golpe blocks was migrated;
- On August 3, 2018, the Integrated E&P Contract governing the Ebano block was migrated; and
- On November 21, 2018, the Integrated E&P Contract governing the Miquetla block was migrated.

In addition, we migrated the FPWCs governing Misión and Olmos blocks on March 2, 2018 and February 22, 2018, respectively, to different contractual frameworks allowed under the Petróleos Mexicanos Law. For more information on the migration of these Integrated E&P Contracts and FPWCs, see "—Other Exploration and Production Contracts" below.

As of the date of this annual report, we are pursuing integration of the technical and economic components of our Integrated E&P Contracts and FPWCs in order to execute extraction activities under the CSIEEs. The implementation of CSIEEs was part of our 2019-2023 Business Plan, see "Item 5— Overview— Business Plan," which was replaced on March 22, 2021, when our Board of Directors approved the business plan of Petróleos Mexicanos and its Subsidiary Productive Companies for 2021-2025. All of these contracts are relatively low risk for proven and probable reserves, and some also have an exploration component.

Additionally, we are negotiating with third-party contractors potential from our current contracts to contracts conforming to CSIEE-type terms. Examples of these negotiations include the FPWCs that govern the Nejo, Soledad, San Andrés, Altamira, Tierra Blanca and Pitepec blocks, all of which were previously evaluated to be migrated to contracts for exploration and extraction under the Hydrocarbons Law.

The goal of these contract amending agreements strategy is to increase our hydrocarbon production and to meet our reserve replacement objectives at competitive costs. As of the date of this annual report, we have not amended any agreement for existing FPWCs or Altamira, Tierra Blanca Integrated E&P Contracts to CSIEEs or similar contracts.

In 2021, natural gas production in the current FPWC blocks reached 32.7 million cubic feet per day and condensate production reached 1.0 thousand barrels per day, for a total of 7.6 thousand barrels of oil equivalent per day.

During 2021, contractors expended U.S. $84 million in connection with Integrated E&P Contracts. In 2021, production in the existing Integrated E&P blocks reached 11.8 thousand barrels per day of crude oil and 34.4 million cubic feet per day of natural gas, for a total of 18.6 thousand barrels of oil equivalent per day.

Farm-outs and CSIEEs

Through farm-outs, we sell a partial interest in fields that have been granted to us and enter into agreements for the joint operation of such fields. This requires third parties to make financial contributions to the partnership and to provide field services, allowing us to recoup some of our previous investments in the fields and to share some of the risk associated with the further development of the fields, while maintaining an interest in the future profits.

On December 11, 2018, the Mexican Government announced the suspension of bidding rounds for exploration and extraction of hydrocarbons contracts for a three-year period in order to evaluate the results and progress of the existing contracts. On June 13, 2019, the Mexican Government announced the suspension of bidding rounds for new farm-outs to provide an opportunity to evaluate the performance of existing farm-outs. The existing farm-outs will continue to operate in accordance with the terms and conditions of their respective contracts. We understand the Mexican Government will use the results of such evaluation to determine whether to pursue farm-outs in the future.

During 2019, in accordance with our 2019-2023 Business Plan, we evaluated the use of CSIEEs as a replacement for farm-outs to encourage the participation of the private sector in our operations. The CSIEE model seeks to increase production by providing for incentive based remuneration dependent on the production received and sharing the operating risks according to the terms of each contract. Each CSIEE contract has a term between 15 and 25 years. It is expected that CSIEEs will replace farm-outs as a vehicle for private sector participation, although existing farm-out arrangements will be maintained for the duration of their respective terms. However, as of December 31, 2021, we have not signed any CSIEEs.

Trión Farm-out

On July 28, 2016, the CNH published the tender offer and bidding package to select a partner for Pemex Exploration and Production to carry out exploration and production activities in the Trión block, which is located in the Perdido Fold Belt in the Gulf of Mexico. Considering that Trión block has a depth greater than 2,500 meters, it requires a high level of technical expertise and financial investment to develop the block.

On December 5, 2016, the CNH announced that BHP Billiton Petróleo Operaciones de México, S. de R.L. de C.V., or BHP Billiton Mexico, an affiliate of BHP Group Limited and BHP Group Plc, had been selected as the partner for Pemex Exploration and Production in the Trión block farm-out. Pursuant to the terms of its bid, BHP Billiton Mexico made a U.S. $789.6 million contribution to the partnership in exchange for a 60% participating interest in the Trión Block. BHP Billiton Mexico is the actual operator of the Trión block and must invest U.S. $1.9 billion in the Trión farm-out before we are required to invest in the project, which will likely not occur until 2023. The corresponding exploration and extraction contract, joint operating agreement and other relevant agreements were executed on March 3, 2017, and the CNH approved both the exploration and evaluation plans in February 2018. As of December 31, 2021, this farm-out is in the exploration and evaluation stages.

Ogarrio, Cárdenas-Mora and Ayin-Batsil Farm-outs

In addition to the Trión farm-out, on October 4, 2017, the CNH held a bidding round for farm-outs of the Ogarrio, Cárdenas-Mora and Ayin-Batsil blocks. No bids were received for the Ayin-Batsil block, which is located in the shallow waters of the Gulf of Mexico. However, multiple bids were received for the Ogarrio block. The Ogarrio and Cárdenas-Mora blocks, both onshore fields located in the state of Tabasco, were awarded to the German company Deutsche Erdoel AG (DEA), which later formally changed its name to Wintershall México DEA, S. de R.L. de C.V. (WSDM), and the Egyptian company Cheiron Holdings Limited (Cheiron), respectively. DEA's bid consisted of an initial cash payment of U.S. $190.0 million, a royalty rate of 13% and an additional cash payment of U.S. $213.9 million, which is the highest sign-up bonus submitted in a CNH bidding round as of the date of this annual report. Cheiron's bid consisted of an initial cash payment of U.S. $125.0 million, a royalty rate of 13% and an additional cash payment of U.S. $41.5 million. The contracts were signed on March 6, 2018 and have a term of 25 years. We retained a 50% interest in both blocks. The Ogarrio and Cárdenas-Mora fields are currently in the development stage following the approval of the development plan by the CNH in March of 2019. In 2021, the Ogarrio field produced 5.0 thousand barrels of crude oil per day and 15.1 million cubic feet per day of natural gas. In 2021, the Cárdenas-Mora block produced 5.4 thousand barrels per day of crude oil and 12.2 million cubic feet per day of natural gas.

Other Exploration and Extraction Contracts

In addition to the farm-outs described above, we have also pursued other types of partnerships for the exploration and production of fields that were not granted to us.

On December 5, 2016, we participated in the bidding process referred to as Round 1.4, through which we, as part of a consortium consisting of Pemex Exploration and Production, Chevron Energía de Mexico, S. de R.L. de C.V., or Chevron Energía, a subsidiary of Chevron Corporation, and INPEX Corporation, were awarded an exploration contract for block 3 located in the Perdido Fold Belt in the Gulf of Mexico. The block covers an area of approximately 1,686.9 square kilometers and is located approximately 117 kilometers off the coast of Mexico in water depths ranging between 500 meters and 1,700 meters. Chevron Energía is the operator and holds a 33.334% interest in the consortium, while Pemex Exploration and Production and INPEX Corporation each hold a 33.333% interest. The corresponding exploration and extraction contract, joint operating agreement and other relevant agreements were executed on February 28, 2017. This project is currently in the exploration phase. The exploration plan was approved by the CNH in March of 2018.

The Ek-Balam project area is in the Campeche Basin. Its production comes from Ek and Balam fields, specifically from the Upper Oxfordian sands and the Upper Cretaceous fractured carbonates.

On May 2, 2017, Pemex Exploration and Production entered into a contract of Production Sharing with the CNH, to upgrade the assignments under the shared shallow water production concession structure for the Ek and Balam project area located in Campeche Basin Pemex Exploration and Production provided a guarantee of U.S. $5.0 billion. Within the framework of the contract, which has a term of 22 years with two possible five-year extensions, the Mexican Government will retain 70.5% of the operating profits and Pemex Exploration and Production will retain 29.5% of the operating profits, as long as there is a cost recovery carry forward.

During 2021, we produced an average of 72.6 thousand barrels per day of crude oil and 16.9 million cubic feet per day of natural gas.

On June 19, 2017, we participated in another bidding round conducted by the CNH, referred to as Round 2.1. As a result of this bidding process, we won two blocks. We were awarded Block 2, which covers an area of 549 square kilometers and is located on the continental shelf of the Tampico--Misantla basin, to the west of the Gulf of Mexico, in partnership with WSDM (f/k/a DEA). We are the operating partner in this block and own a 70% interest. Additionally, we were awarded Block 8, which is in the Southeastern Basins and covers an area of 586 square kilometers, in partnership with Colombia's Ecopetrol. In Block 8, we are also the operating partner and own a 50% interest. The corresponding contracts for the exploration and extraction of hydrocarbons with WSDM and Ecopetrol were signed on September 25, 2017. Both blocks are in the exploration phase following approval of the exploration plans by the CNH in November and October of 2018, respectively.

On December 18, 2017, we executed contracts in association with Petrofac México, S.A. de C.V., or Petrofac, under which we assigned to Petrofac the rights to certain fields that were part of the El Golpe-Puerto Ceiba project, including the onshore fields of Santuario and El Golpe located in the state of Tabasco. We have a 64% share in this project. During 2021 we had an average production of 18.5 thousand barrels per day of crude oil and 15.4 million cubic feet per day of gas. These fields are currently in the development stage following approval of the development plan by the CNH in December of 2018.

On March 2, 2018, we completed the first migration of an FPWC. The FPWC governing the Misión block was migrated to a shared production contract with Servicios Múltiples de Burgos, S.A. de C.V. and the CNH. The Misión block is in the states of Nuevo León and Tamaulipas. We have a 51% interest in the contractual area and the average production under this contract in 2021 amounted to 93.6 million cubic feet per day of natural gas. The FPWC governing the Misión block allows exploration and extraction activities. The CNH approved the development plan in January 2019 and the exploration plan in April 2019. The Misión block is currently in both the exploration and extraction phases.

On March 27, 2018, we successfully participated in the first call of bidding Round 3 of the CNH, and were awarded seven contractual areas in shallow waters, six of them as part of a consortium and one on an individual basis. Pemex Exploration and Production won four blocks in the Southeast Basins: two in consortium with Total S.A., one with Shell Oil Company and one individually, as well as three blocks corresponding to the province of Tampico-Misantla-Veracruz: two in partnership with Compañía Española de Petróleos and one in partnership with WSDM (f/k/a DEA).

We participated in another bidding round conducted by the CNH, referred to as Round 2.4, obtaining four exploration blocks. On May 7, 2018, we signed four exploration and extraction contracts covering several deep-water blocks in the Gulf of Mexico, the rights to which were auctioned off pursuant to the bidding process:

- Block 2 with Shell Exploración y Extracción de México, S.A. de C.V., as operator. We have a 50% interest in the contractual area, which spans 2,146 square kilometers and is in the Plegado Perdido Belt.
- Block 5. We are the operator of and have a 100% interest in the contractual area, which spans 2,733 square kilometers and is in the Perdido Foldbelt.
- Block 18. We are the operator of and have a 100% interest in the contractual area, which spans 2,917 square kilometers and is in the Mexican Ridges Foldbelt region.
- Block 22 with Chevron Energía de Mexico, S. de R.L. de C.V., as operator, and Inpex E&P México, S.A. de C.V. We have a 27.5% interest in the contractual area, which spans 2,879 square kilometers and is in the Cuenca Salina region.

The CNH approved the exploration plans for Blocks 5 and 22 in June and May 2019, respectively. Exploration plans were also approved by CNH for Block 2 in June 2019 and Block 18 in August 2019. These blocks are currently in the exploration phase.

On June 27, 2018, we signed seven exploration and extraction contracts covering shallow water blocks in the Gulf of Mexico, the rights to which were auctioned off pursuant to the bidding round referred to as Round 3.1:

- Block 16 with WSDM (f/k/a DEA) as operator, and Cepsa E.P. Mexico, S. de R.L. de C.V. We have a 40% interest in the contractual area, which spans 785 square kilometers and is in the Tampico-Misantla-Veracruz area.
- Block 17 with WSDM (f/k/a DEA) as operator, and Cepsa E.P. Mexico, S. de R.L. de C.V. We have a 40% interest in the contractual area, which spans 842 square kilometers and is in the Tampico-Misantla-Veracruz area.
- Block 18 with Cepsa E.P. Mexico, S. de R.L. de C.V. We operate the block with an 80% interest in the contractual area, which spans 813 square kilometers and is in the Tampico-Misantla-Veracruz area.
- Block 29. We are the operator of and have a 100% interest in the contractual area, which spans 471 square kilometers and is in the Cuencas del Sureste area.
- Block 32 with Total E&P México, S. A. de C.V. We operate the block with a 50% interest in the contractual area, which spans 1,027 square kilometers and is in the Cuencas del Sureste area.
- Block 33 with Total E&P Mexico, S. de R.L. de C.V. as operator. We have a 50% interest in the contractual area, which spans 581 square kilometers and is in the Cuencas del Sureste area.
- Block 35 with Shell Exploración y Extracción de México, S.A. de C.V. as operator. We have a 50% interest in the contractual area, which spans 798 square kilometers and is in the Cuencas del Sureste area.

The CNH approved the exploration plans for Block 18 in August 2019, for Blocks 16 and 17 in September 2019 and for Blocks 29, 32, 33, 35 in October 2019. These blocks are currently in the exploration phase.

On August 3, 2018, we migrated the Integrated E&P Contract for the Ébano block to a shared production contract with DS Servicios Petroleros, S.A. de C.V. (DIAVAZ), as operator, and D&S Petroleum, S.A. de C.V. The Ébano block spans an area of 1,569.1 square kilometers and is located in the states of Veracruz, San Luis Potosí and Tamaulipas. In 2021, average production under this contract was 5.5 thousand barrels per day of crude oil and 1.4 million cubic feet per day of gas. We and DIAVAZ contributed to a corporate guarantee delivered to the Mexican Government in accordance with our respective interests in the partnership. The corporate guarantee totaled U.S. $500 million, 55% of which was contributed by us and 45% of which was contributed by DIAVAZ.

Our shared production contract for the Ébano block allows for exploration and extraction activities. The CNH approved the development plan in May 2019 and the exploration plan in October 2019. This block is currently in both the exploration and extraction phases.

On September 18, 2018, we signed a pre-unitization agreement related to certain tracts of the Yaxché fields and the shared production contract for Block 7 with a consortium of Talos Energy, Offshore Mexico, as operator, Sierra Oil & Gas and Premier Oil. Both areas are located in the offshore regions of Mexico's Southeast basin. This pre-unitization agreement was a two-year contract that enabled information sharing relating to the Zama discovery, which spans Block 7 and a neighboring block assigned to us.

On November 21, 2018, we migrated the Integrated E&P Contract for the Miquetla block to a license contract with Operadora de Campos DWF, S.A. de C.V., as operator. The Miquetla block spans 139.7 square kilometers and is located in the states of Puebla and Veracruz. In 2021, average production under this contract was 1.0 thousand barrels per day of crude oil and 3.9 million cubic feet per day of natural gas. We have a 49% interest in the contractual area and the contract has a term of 30 years. Our license contract for the Miquetla block allows for exploration and extraction activities. The CNH approved the development and exploration plans in November 2019. This block is currently in both the exploration and extraction phases.

On December 9, 2019, the Talos-led consortium submitted to SENER a shared reservoir notice for the Zama field. On March 5, 2020, SENER resolved to continue with the unitization process.

On May 21, 2020, based on the technical opinion of the CNH, the Ministry of Energy determined that Zama is a shared field. Therefore, in accordance with current legislation, in July 2020, the Ministry of Energy instructed us and the "Block 7 Consortium" (Talos Energy Offshore Mexico 7, S. de R.L. de C.V., Sierra O&G Exploración y Producción, S. de R.L. de C.V. (now a Wintershall DEA company) and Premier Oil Exploration and Production Mexico, S.A. de C.V.) to carry out the unification of the Zama field, with the aim of maximizing the exploitation of this field for the benefit of Mexico. In response, we and the Block 7 Consortium continued with our discussions in order to jointly submit a proposed unification agreement to SENER. In September 2020, we and the Block 7 Consortium decided to activate the expert's procedure outlined in the preliminary unification agreement. On April 22, 2021, we and the Block 7 Consortium received the final expert report that defined the initial tract participation in the Zama reservoir. The final expert report determined that we have 50.43% of the Zama reservoir whereas the Block 7 Consortium have the other 49.57%.

We and the Block 7 Consortium were unable to reach an agreement with respect to the unification of the Zama field, to be submitted to SENER by March 26, 2021. Therefore and in accordance with current legislation, SENER must determine the terms and conditions of the unification by the end of March, 2022.

On July 22, 2021, SENER with the technical opinion of CNH, appointed PEP as the Operator of Zama project. On September 3, 2021, Talos submitted a Dispute Notification to the Mexico´s Ministry of Economy regarding the designation of Pemex as the Operator of the field by the Mexican Government.

Expediting the development of newly discovered fields

In 2021, we worked to develop 27 fields, 21 in shallow water and 6 onshore. We had previously begun to work on 24 of these fields in 2019-2020. We designed a strategy for these developments, considering integrated services contract schemes and a simplified contract process.

To improve the contracting process, we established the following four strategies:

- regulatory, contractual and constructive simplification;
- establishing reference engineering;
- homologation of technical bases for design; and
- encouraging the formation of companies' consortiums with major financial and technical capacity to develop the required infrastructure for the production and transportation of hydrocarbons, such as platforms, pipelines, process plant and equipment.

Further, we established two policies for the execution of our new developments:

- leverage already installed infrastructure and equipment to interconnect to new facilities and handle new field production; and

- adopt an early production philosophy with respect to exploration and infrastructure teams, and work to produce exploratory wells for a double purpose: obtaining cash flow as soon as possible and obtaining data from the well and reservoir.

In 2021, we contracted 1 infrastructure development package, which entailed the development of 3 platforms and 2 pipelines. The global progress of construction of marine infrastructure is 59% The progress of construction of land infrastructure (land platforms, pipelines, process) has been done, under integrated services contracts, previously settled, and has progressed 17%

In 2021, we also had 9 drilling services contracts to continue the drilling of well in new fields. As of December 31, 2021, we had begun production in 24 of these 27 fields. These fields had an average production of 221.2 thousand barrels per day of crude oil and 567.8 million cubic feet per day of natural gas in 2021.

Collaboration and Other Agreements

Pemex Exploration and Production has developed non-commercial collaboration agreements in partnerships with other research institutes, and drilling and services companies, with the intention of sharing technical knowledge to apply it in activities regarding hydrocarbons exploration and production, increase scientific and technical knowledge of the human capital in specific interest areas such as hydrocarbon exploration, well drilling, enhanced recovery, reservoir characterization in complex structures and extra heavy oil enhancement.

As of the date of this annual report, the following agreements remain in effect:

- University of Calgary: Project for research, generation and application of technologies applied in mature, non-conventional, heavy and extra heavy oilfields; and
- University of Alberta: Projects for geomechanics characterization for naturally fractured reservoirs through their different stages of exploitation, and determinate the variation of the elastic and dynamic properties of the rock due to the change of the efforts.

Industrial Transformation

Our industrial transformation segment is comprised of four principal activities: (i) refining, (ii) gas and aromatics (iii) ethylene and derivatives and (iv) fertilizers, since January 1, 2021.

Refining

Refining Processes and Capacity

Our refining production processes include the following:

- *Atmospheric distillation*. This process heats crude oil in a tube furnace at atmospheric pressure to distill refined products. The primary products produced are gasoline, jet fuel, diesel, atmospheric gas oil and atmospheric residual crude oil.
- *Vacuum distillation*. This process heats crude oil or other feedstock in a vacuum distillation column, which is operated at low pressures. The objective of this process is to maximize production of heavy vacuum gas oil, which is produced by boiling crude oil.
- *Cracking*. This process uses either heat and pressure or a catalytic agent to increase gasoline yields from crude oil.
- *Visbreaking*. This is a thermal cracking process, which uses a horizontal-tube heater brought to a high temperature. Visbreaking reduces flasher bottom viscosity and produces some heavy gas oil.
- *Reforming processes*. These processes use heat and catalysts to transform smaller or unstable hydrocarbon molecules into larger, more useful refining or blending products. For example, we use reforming processes to convert low octane gasoline into higher octane stocks that are suitable for blending into finished gasoline and to convert naphthas into more volatile, higher octane products.
- *Hydrotreatment or residual hydrocracking*. This process uses a catalyst and hydrogen at high temperature and pressure to remove sulfur, nitrogen and some aromatic compounds. Hydrotreatment also processes some lighter liquid product off-take. The new processes also include the saturation of aromatic compounds.
- *Alkylation and isomerization*. This polymerization process unites olefins and isoparaffins. Butylenes and isobutanes are combined with sulfuric acid or hydrofluoric acid to rearrange straight-chain hydrocarbon molecules into branched-chain products. Pentanes and hexanes, which are difficult to reform, are isomerized through the use of aluminum chloride and

other precious-metal catalysts. Normal butane may be isomerized to provide a portion of the isobutene feed needed for the alkylation process. The process produces a high octane, low sensitivity blending agent for gasoline.

- *Coking*. This process is a severe method of thermal cracking used to upgrade heavy residuals into lighter products or distillates. Coking produces straight-run gasoline (coker naphtha) and various middle-distillate fractions used as catalytic feedstock, thus generating a concentrated solid material.

These production processes together constitute our production capacity as set forth in the table below.

Refining Capacity by Production Process

	At December 31,				
	2021	2020	2019	2018	2017
	(in thousands of barrels per day)				
Production Process					
Atmospheric distillation	1,640.0	1,640.0	1,640.0	1,640.0	1,627.0
Vacuum distillation	772.2	772.2	772.2	772.2	772.2
Cracking	422.5	422.5	422.5	422.5	422.5
Visbreaking	91.0	91.0	91.0	91.0	91.0
Reforming	279.3	279.3	279.3	279.3	279.3
Hydrotreatment	1,230.0	1,230.0	1,230.0	1,230.0	1,230.0
Alkylation and isomerization	154.3	154.3	154.3	154.3	154.3
Coking	155.8	155.8	155.8	155.8	155.8

Source: Base de Datos Institucional (Pemex Institutional Database, or Pemex BDI).

As of December 31, 2021, we owned and operated six refineries: Cadereyta, Madero, Minatitlán, Salamanca, Salina Cruz and Tula. Our refineries consist of atmospheric and vacuum distillation units, where the bulk of crude oil input is processed. Secondary processing facilities include desulfurization units and facilities for catalytic cracking, reforming and hydrotreating.

As a result of the continuation of the National Refining System rehabilitation program, during 2021 the National Refining System crude oil process averaged 711.6 thousand barrels per day, 121 thousand barrels per day higher than in 2020. This increase is explained by better operating performance in the following refineries: Salina Cruz with a process of 176.7 thousand barrels per day, Tula with 140.8 thousand barrels per day, Cadereyta with 121.5 thousand barrels per day, Salamanca with 103.5 thousand barrels per day and Minatitlán with 94.6 thousand barrels per day. Of the total crude oil processed, 360.3 thousand barrels per day were Olmeca and Isthmus crude oil and 351.3 thousand barrels per day of Maya crude oil.

In the fourth quarter of 2021 the National Refining System crude oil process averaged 739.9 thousand barrels per day, 155.5 thousand barrels per day higher than in the same quarter of 2020. During the fourth quarter of 2021 all National Refining System refineries recorded a better operating performance as compared to the same period in 2021: Salina Cruz with a process of 168.6 thousand barrels per day, Minatitlán with 142.9 thousand barrels per day, Salamanca with 115.1 thousand barrels per day, Tula with 111.2 thousand barrels per day, Cadereyta with 106.8 thousand barrels per day and Madero with 95.4 thousand barrels per day.

Other actions being carried out to achieve this objective are the rehabilitation of the six refineries of the National Refining System, the construction of the new Dos Bocas refinery and the Residual Use of Tula refinery. The National Refining System rehabilitation program emphasizes addressing critical risks to our facilities, restoring reliability of assets, improving efficiency and stabilizing our crude oil processing. To this end, from September 2019 to December 2021, major and minor repairs were carried out at various facilities of the National Refining System. Most repairs were made to our crude oil distilling units, combines, viscosity reducers, cokers, catalytic reformers, solvent desalphalting units, catalytic reformers, methyl tert-butyl ether (MTBE) units, alkylation units, isomerization units, hydrotreaters and sulfur recovery units, as well as facilities at the main service area and storage tanks. The National Refining System rehabilitation program will continue throughout 2022.

Since 1993, through our subsidiary company, PMI-NASA, we have participated in a limited partnership with Shell Oil Company in a refinery located in Deer Park, Texas, which has the capacity to process 340 thousand barrels per day of crude oil.

The investment in Deer Park as of December 31, 2021 was Ps. 6.7 billion, which represented the 49.995% of interest of PMI NASA in Deer Park.

Because of liquidity problems towards the end of 2020 caused by COVID-19 and a heavy snowfall in February 2021 that affected industries within the Texas area, the Deer Park refinery was negatively impacted and resulted in a total emergency stoppage, resuming the activities by the last week of March 2021; however, repair activities were required and ended until November 2021. Also, the Environmental Protection Agency of the United States of America increased the renewable blending cost obligations under the Renewable Fuel Standard program, which requires the blending of renewable products for transportation fuels. PMI-NASA and the Shell Oil Company provided financial support to the refinery at the beginning of 2021, which allowed the refinery to continue operating during 2021.

As a result, indications of impairment were identified, and at the end of 2021, impairment tests were carried out on the amount of the investment recognized in Deer Park, and the result was the recognition of a total impairment in the book value of the investment as of December 31, 2021 in the amount of Ps. 6.7 billion.

In January 2022, PEMEX acquired the remaining 50.005% interest in Deer Park. For further information related Deer Park acquisition see Notes 12 and 28-F our Consolidated Finncial Statements included herein.

Production

We produce a wide range of products derived from crude oil and natural gas, including LPG, gasoline, jet fuel, diesel, fuel oil, asphalts, lubricants and other refined products. In 2021, we produced 722.4 thousand barrels per day of refined products (including dry gas by-products of the refining process), an increase of 21.1% as compared to 596.4 thousand barrels per day in 2020.

The following table sets forth, by category, our production of petroleum products for the five years ended December 31, 2021.

Refining Production

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in thousands of barrels per day)					
Refinery Crude Oil Runs	**711.6**	**590.6**	**592.0**	**611.9**	**767.0**	**20.5**
Refined Products						
Liquefied petroleum gas	8.5	5.5	7.2	10.1	15.8	54.5
Gasoline						
Pemex Magna	7.3	5.0	13.9	8.8	11.0	46.0
Ultra-Low Sulfur Magna	216.9	177.2	187.1	196.4	238.7	22.4
Pemex Premium[1]	5.2	2.7	1.7	1.9	5.6	92.6
Base	3.4	0.6	0.8	—	1.8	466.7
Total	232.8	185.5	203.5	207.1	257.0	25.5
Kerosene (Jet fuel)	28.4	17.5	29.0	34.7	40.5	62.3
Diesel						
Pemex Diesel[2]	50.5	55.6	54.8	67.8	87.4	(9.2)
Ultra-Low Sulfur Diesel	67.2	57.2	74.1	48.9	63.8	17.5
Others	—	0.8	1.3	0.1	2.4	(100.0)
Total	117.7	113.6	130.3	116.8	153.6	3.6
Fuel oil[3]	244.3	176.0	149.8	185.1	217.3	38.8
Other refined products						
Asphalts	10.0	8.9	10.0	13.8	16.5	12.4
Lubricants	0.1	0.2	0.9	1.9	1.9	(50.0)
Paraffins	—	—	0.2	0.5	0.4	—
Still gas	53.0	41.9	45.4	34.8	47.9	26.5
Other refined products[4]	27.7	47.1	49.3	23.7	35.5	(41.2)
Total	90.8	98.2	105.8	74.7	102.1	(7.5)
Total refined products	**722.4**	**596.4**	**625.6**	**628.5**	**786.2**	**21.1**

Note: Numbers may not total due to rounding.

(1) Pemex Premium is an ultra-low sulfur gasoline with 0.003% sulfur content.
(2) Pemex Diesel is sold in the northern border market with 0.003% sulfur content.
(3) Includes heavy fuel oil and intermediate 15.
(4) Includes coke, light cyclic oil and aeroflex.
Source: Pemex BDI.

Our refining production mostly consists of gasoline, diesel and fuel oil. In 2021, gasoline represented 32.2%, diesel fuel represented 16.3%, jet fuel represented 3.9%, LPG represented 1.2% and fuel oil represented 33.8% of total petroleum products production. The remainder, 12.6% of our production, consisted of a variety of other refined products.

Variable Refining Margin

During 2021, the National Refining System recorded a variable refining margin of U.S. $2.92 per barrel, an increase of U.S. $2.16 per barrel as compared to U.S. $0.76 in 2020 mainly due to higher prices of refined products in the Northern Gulf Coast of Mexico.

The following table sets forth the variable refining margin for the five years ended December 31, 2021.

Variable Refining Margin

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020 (%)
	(U.S. dollars per barrel)					
Variable margin	2.92	0.76	0.80	0.96	5.43	284.2

Domestic Sales

We market a full range of refined products, including gasoline, jet fuel, diesel, fuel oil and petrochemicals. We are one of a few major producers of crude oil worldwide that experiences significant domestic demand for our refined products.

For the five years ended December 31, 2021, the value of our domestic sales of refined products and petrochemicals was as follows.

Value of Refining's Domestic Sales[1]

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
			(in millions of pesos)[2]			(%)
Refined Products						
Gasoline						
Pemex Magna	Ps. 319,238.9	Ps. 212,256.8	Ps. 374,020.2	Ps. 428,838.0	Ps. 361,021.7	50.4
Pemex Premium	91,758.1	72,658.1	75,538.0	83,837.1	82,028.7	26.3
Aviation fuels (Others)	453.8	312.9	404.7	433.1	371.1	45.0
Total	Ps. 411,450.9	Ps. 285,227.7	Ps. 449,962.8	Ps. 513,108.2	Ps. 443,421.5	44.3
Kerosene (Jet fuel)	41,478.4	20,156.5	55,716.4	56,793.9	39,024.5	105.8
Diesel						
Pemex Diesel	121,604.6	98,160.8	171,405.9	207,499.4	181,854.4	23.9
Others	18,797.9	12,455.1	23,659.7	26,669.3	28,195.1	50.9
Total	Ps. 140,402.5	Ps. 110,615.9	Ps. 195,065.6	Ps. 234,168.6	Ps. 210,049.5	26.9
Fuel oil	19,348.2	9,139.5	28,789.8	43,779.1	35,622.9	111.7
Other refined products						
Asphalts	5,447.6	4,569.9	6,058.3	7,062.0	5,895.8	19.2
Lubricants	120.0	186.8	673.3	1,277.4	1,061.4	(35.8)
Paraffins	—	—	135.8	291.4	230.9	—
Coke	813.7	440.4	666.0	200.5	421.1	84.8
Citroline	—	—	—	—	3.6	—
Total	Ps. 6,381.2	Ps. 5,197.2	Ps. 7,533.5	Ps. 8,831.2	Ps. 7,612.8	22.8
Total Refined Products	**Ps. 619,061.2**	**Ps. 430,336.8**	**Ps. 737,068.1**	**Ps. 856,681.0**	**Ps. 735,731.2**	**43.9**
Petrochemicals[3]	**Ps. 3,692.6**	**Ps. 1,432.2**	**Ps. 2,422.4**	**Ps. 3,795.9**	**Ps. 3,905.6**	**157.8**

Note: Numbers may not total due to rounding.
(1) Excludes IEPS tax and value added tax. See "—Taxes, Duties and Other Payments to the Mexican Government" in this Item 4.
(2) Figures are stated in nominal pesos.
(3) Petrochemical products produced at refineries (carbon black feedstocks and propylene).
Source: *Pemex BDI.*

In 2021, our domestic sales of refined products increased by Ps. 188,724.4 million, or 43.9% in value as compared to 2020 levels (excluding IEPS tax and value added tax). This was primarily due to a 44.3% or Ps. 126,233.2 million increase in the value of our gasolines sales, an increase of 26.9% or Ps. 29,786.6 million in the value of our diesel sales and an increase of 105.8% or Ps. 21,321.9 million in the value of our fuel oil sales, due to the price effect of these fuels.

The volume of our domestic sales of refined products for the five-year period ended December 31, 2021 was distributed as follows.

Volume of Refining's Domestic Sales

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in thousands of barrels per day, except where otherwise indicated)					(%)
Refined Products						
Gasoline						
Pemex Magna	451.6	435.0	607.5	646.2	660.5	3.8
Pemex Premium	123.3	136.2	112.7	117.5	136.6	(9.5)
Aviation fuels (Others)	0.5	0.4	0.5	0.5	0.5	25.0
Total	575.4	571.6	720.6	764.2	797.5	0.6
Kerosenes (jet fuel)	62.0	39.4	83.3	85.6	81.7	57.4
Diesel						
Pemex Diesel	178.3	192.7	256.9	292.8	317.6	(7.5)
Others	27.8	24.8	36.3	38.5	47.9	12.1
Total	206.1	217.5	293.2	331.3	365.5	(5.3)
Fuel oil	78.1	55.2	76.5	105.1	124.7	41.5
Other refined products						
Asphalts	9.6	8.5	9.5	12.9	15.4	12.9
Lubricants	0.2	0.3	1.0	2.0	2.0	(33.3)
Paraffins	—	—	0.2	0.5	0.4	—
Coke	21.3	26.2	27.4	13.2	21.3	(18.7)
Citroline	—	—	—	—	—	—
Total	31.1	35.0	38.1	28.5	39.1	(11.1)
Total refined products	**952.7**	**918.6**	**1,211.7**	**1,314.8**	**1,408.4**	**3.7**
Petrochemicals[1]	**289.4**	**302.4**	**363.2**	**411.1**	**464.5**	**(4.3)**

Note: Numbers may not total due to rounding.

(1) In thousands of metric tons. These are petrochemical products produced in our refineries (raw material for black carbon and propylene).

Source: *Pemex BDI.*

The volume of our domestic gasoline sales increased by 0.6% in 2021, from 571.6 thousand barrels per day in 2020 to 575.3 thousand barrels per day in 2021, due to greater mobility in the country, which generated higher demand for fuels, mainly in the fourth quarter of 2021. The volume of our diesel sales decreased by 5.3%, from 217.5 thousand barrels per day in 2020 to 206.0 thousand barrels per day in 2021 as a result of a reduction in demand at a national level during the third quarter of 2021, due to the gradual economic reopening for the services sector and a slowdown in the tourism sector.

The volume of our domestic sales of fuel oil increased by 41.5%, from 55.2 thousand barrels per day in 2020 to 78.1 thousand barrels per day in 2021, primarily due to an increase in CFE's demand for fuel oil.

In the case of gasoline, Pemex Premium sales were 123.3 thousand barrels per day in 2021, a reduction of 9.5% compared to 136.2 thousand barrels per day in 2020, while Pemex Magna sales were 451.6 thousand barrels per day which means an increase of 3.8% compared to 2020 which was 435.0 thousand barrels per day. This behavior is explained by the preferences of Pemex customers who preferred to purchase Pemex Magna.

In 2021, the following actions were carried out to recover the volume of petroleum product sales: competitive terminal prices, strengthening Pemex's commercial presence through branded commercial schemes suitable for customers, product availability throughout the national territory, market contractual relationships (unregulated contract with and without brand), attractive discounts, bonuses and incentives, creation of value for customers and establishing loyalty programs. These efforts, coupled with increased mobility as pandemic restrictions loosened during the last quarter of 2021, resulted in a recovery of sales due to greater demand for fuels.

On November 15, 2017, we relaunched the "Pemex Franchise" image program with a new business model that includes new products and a variety of association structures. The goal of this program, which consists of nearly 10,000 service stations throughout Mexico, is to provide better service to end users and to strengthen the PEMEX brand.

On October 11, 2018, we launched the seventh generation of our high-end performance additive, Pemex Aditec, that blends with our Pemex Magna and Pemex Premium gasolines. Pemex Aditec is a multifunctional additive and is formulated to help obtain optimum performance, cleanliness and protection of the engine.

During the last quarter of 2019, we began the development of the eighth generation of the performance additive for Pemex gasolines in conjunction with the *Instituto Mexicano del Petróleo* (Mexican Petroleum Institute or IMP). The development of this additive includes innovations such as a molecular tracer, new high-spectrum detergent molecules and corrosion and oxidation inhibition. We expect to launch the eighth generation of our additive in the last quarter of 2022.

To reinforce the value of the Pemex brand and the Pemex Franchise, during the second half of 2020, we launched two new formats of service stations: nano stations and low consumption stations. Nano stations have innovative and differentiated designs, capable of adapting to reduced land surfaces in urban areas with high traffic concentration. Low consumption stations leverage low-cost technologies and quick installation to meet the demands of rural populations.

As part of our commercial strategy, we operate wholesale and retail service stations, some of which are PEMEX-branded and others of which are unbranded. The unbranded stations buy products through marketing contracts and, when appropriate, have access to discounts and credit. In the case of our PEMEX-branded stations, both Pemex marketers and associate distributors can sell products with the Pemex brand. Retailers to the public may only buy products through marketing contracts, just as they may only sell Pemex brand products through a franchise agreement or a Pemex brand sublicensing agreement. As of December 31, 2021, 1,149 redesigned service stations were operating and 445 additional services stations have requested redesigns.

As of December 31, 2021, there were 6,999 Pemex retail service stations associated with Pemex in Mexico, of which 6,954 were privately owned and operated as franchises, while the remaining 45 were owned by Pemex Industrial Transformation. This total number of retail service stations represents a decrease of 6.3% from the 7,468 service stations as of December 31, 2020. This decrease was mainly due to increased competition in the open market. As of December 31, 2021, we had 1,474 marketing contracts, a decrease of 859 marketing contracts as compared to 2,333 marketing contracts as of December 31, 2020. The decrease in the number of marketing contracts was mainly due to the higher concentration of customer volume in each contract as a result of new commercial contract models. From the 1,474 contracts signed at the end of 2021, we have 348 contracts signed under the new contract model, which include 80% of the most important marketing customers and distributors in terms of volume at the national level. In addition, Pemex Industrial Transformation supplies oil products to 4,460 service stations outside the Pemex Franchise. Of these service stations, 994 operate under a sublicense of PEMEX brands and 1,778 use third-party brands.

In order to gain market presence, competitors often transfer well-established Pemex gas stations to third-party brands. As a result, we are working to counteract this by opening new gas stations under our franchise model and strengthening the Pemex brand among our existing gas stations.

Despite the aggressive competitive environment and our relatively limited marketing investment, we maintained approximately 60.4% of market share with our franchised and sub-licensed Pemex gas stations by the end of December 2021.

Pricing Regulations

On December 31, 2017, fuel prices in Mexico were liberalized. However, the CRE has the authority to intervene within the regulated markets. Therefore, our retail sales prices (final consumer's prices) can be subject to potential future regulations by the CRE, such as the case of the retail sales prices (final user's price) of LPG, whose maximum prices are regulated, pursuant to the *Directriz de emergencia para el bienestar del consumidor de gas licuado de petróleo* (Emergency directive for the welfare of the liquified petroleum gas consumer), issued by the Ministry of Energy, with the purpose of protecting the end users until the *Comisión Federal de Competencia Económica* (Federal Economic Competition Commission) determines that there is effective competition in that activity.

Through agreements A/030/2018 and A/022/2019, the CRE abrogated the asymmetric regulation of Pemex Industrial Transformation with respect to the commercialization of natural gas.

Both the first-hand sale and the full market price are determined by the full marketing price.

Gasoline and Diesel

On November 30, 2017, sale prices of gasoline and diesel were liberalized and are determined by the free market. For more information, see "Item 5—Operating and Financial Review and Prospects—IEPS Tax, Hydrocarbon Duties and Other Taxes."

On January 1, 2021, in accordance with reports issued by the CRE, average national regular retail gasoline prices increased by Ps. 1.01 per liter, as compared to December 31, 2020. Similarly, average national retail diesel prices increased by Ps. 0.72 per liter on January 1, 2021, as compared to December 31, 2020.

Fuel Oil

On November 3, 2017, the CRE authorized new formulas to determine the price of fuel oil. Currently, there are first-hand sale prices for sales at refineries and market prices for sales at storage terminals. These prices are calculated weekly and apply to all customers, including the CFE.

We withhold IEPS tax. While it is included in the price to our customers, we pay this tax to the authorities upon collection of the sale of our products and it is not included in our revenues. For more information, see "Item 4—Taxes, Duties and Other Payments to the Mexican Government—Fiscal Regime for PEMEX."

As of January 1, 2020, the *IEPS a los Combustibles Fósiles* (IEPS Tax on Fossil Fuels) was 16.99 Mexican cents per liter, as of January 1, 2021, the IEPS Tax on Fossil Fuels was 17.56 Mexican cents per liter and as of January 1, 2022, the IEPS Tax on Fossil Fuels was 18.85 Mexican cents per liter.

Natural Gas

As of July 1, 2017, the CRE permits third-party participants to enter the gasoline and diesel market and has authorized the permanent regime of first-hand sales of natural gas. This permanent regime allows us to sell natural gas under two separate pricing mechanism and all end user prices are freely determined by the market:

(1) the first-hand sale price, whereby we sell natural gas directly to customers at the injection points, without the use of transportation or additional services; and

(2) the full marketing price, whereby we sell natural gas at cusotomer plants. Under this scheme, the price of the molecule includes transportation and services costs associated with the commercialization of natural gas.

Liquefied Petroleum Gas (LPG)

Since December 16, 2019, we have determined market list prices according to the pricing mechanisms approved by the *Comité de Precios y Aspectos Económicos de la Política Comercial de Petróleos Mexicanos y Empresas Productivas Subsidiarias* (Committee on Prices and Economic Aspects of the Commercial Policy of Petróleos Mexicanos and its Productive Subsidiary Entities). This change is in compliance with Resolution RES/1008/2019 of the CRE, which considers our participation in first-hand sales and the marketing of LPG within a free market. Additionally, on December 16, 2019, the CRE issued Resolution RES/1755/2019, in which it approved the commercialization contract agreement model.

As of January 1, 2020 the IEPS Tax on Fossil Fuels was 15 Mexican cents per kilogram. As of January 1, 2021, this tax was 16 Mexican cents per kilogram, and, as of January 1, 2022, this tax is 17 Mexican cents per kilogram. We withhold IEPS tax. For more information, see "Item 4—Taxes, Duties and Other Payments to the Mexican Government—Fiscal Regime for PEMEX."

The Mexican Government could modify these price controls or impose additional price controls in the future. See "Item 3—Key Information—Risk Factors—Risk Factors Related to our Relationship with the Mexican Government—The Mexican Government has historically imposed price controls in the domestic market on our products."

The LPG retail sales price (final user's price) is regulated by the CRE as of August 1, 2021, pursuant to the *Directriz de emergencia para el bienestar del consumidor de gas licuado de petróleo* (Emergency directive for the welfare of the liquified petroleum gas consumer), issued by the Ministry of Energy, with the purpose of protecting the end users.

Refining's Capital Expenditures and Budget

Investments

Over the past several years, we have focused our investment program on enhancing the quality of the gasoline and diesel we produce to meet Mexico's environmental standards. Also, we shifted our focus to the maintenance of our existing refineries and the expansion of the National Refining System to increase our hydrocarbon production. We continue to aim to stabilize and improve our

ability to process heavy crude oil in order to optimize our refinery production and increase our production of other hydrocarbons in order to supply the growing national demand.

Our refining business invested Ps. 20,594 million in capital expenditures in 2021 and has budgeted Ps. 4,379 million in capital expenditures for 2022.

A focus of our refining capital expenditures program is the rehabilitation of the National Refining System. Pursuant to the rehabilitation program, we have evaluated each of our six existing refineries and have identified specific maintenance requirements for each unit. Our rehabilitation program focuses on addressing critical risks to the facilities such as mechanical integrity and safety and improving the efficiency and the stabilization of our crude oil processing.

The following table sets forth our refining business' capital expenditures, excluding non-capitalizable maintenance, for each of the three years ended December 31, 2021, and the budget for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to the capital expenditure amounts in our consolidated financial statements prepared in accordance with IFRS.

Refining's Capital Expenditures

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Refining				
National Refining System Rehabilitation Program	Ps. 15,591	Ps. 10,638	Ps. 1,196	Ps. 4,368
Tula	3,282	2,144	217	728
Cadereyta	2,723	1,897	208	728
Salamanca	2,552	1,336	174	728
Minatitlán	2,525	1,300	140	728
Madero	2,278	1,770	59	728
Salina Cruz	2,232	2,192	398	728
Residual Use at the Miguel Hidalgo Refinery in Tula (Formerly Reconfiguration of Miguel Hidalgo Refinery in Tula)	4,400	48	948	—
Cadereyta Refinery Energy Train	52	14	15	—
Maintenance of the Production Capacity of the Salamanca Refinery 2014-2018	38	—	33	—
Fuel Quality Investments[4]	5	66	1,374	11
Maintenance of the Production Capacity of the Salina Cruz Refinery 2013-2017	3	25	296	—
Installation of a 250 T/hr. Steam Boiler in the Minatitlan Refinery	2	34	115	—
Maintenance of the Production Capacity of the Minatitlán Refinery 2013-2017	—	42	519	—
Residual Conversion of the Salamanca Refinery	—	7	17	—
Supervision and Administration Work for the use of Waste in the Salina Cruz Refinery	—	3	8	—
Rehabilitation of Electrical Substations Miguel Hidalgo Refinery	—	1	843	—
Maintenance of the Production Capacity of the Madero Refinery 2014-2017	—	—	1,717	—
Maintaining the Production Capacity of the Cadereyta Refinery 2013-2015	—	—	1,140	—
Adequacy of the Burner System and Installation of an Elevated Burner at the Francisco I. Madero Refinery	—	—	62	—

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Integral Maintenance Program and Process Compressor Technology Update at the Miguel Hidalgo Refinery	—	—	25	—
Acquisition of Capitalizable Catalysts for the Hydrotreatment Process in the Tula Refinery	—	—	12	—
Tuxpan Pipeline and Storage and Distribution Terminals.....	—	—	3	—
Others.....	503	—	87	—
Total	**Ps. 20,594**	**Ps. 10,878**	**Ps. 8,409**	**Ps. 4,379**

Notes: Numbers may not total due to rounding.

(1) Amounts based on cash basis method of accounting.

(2) Amended budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.

(3) Figures are stated in nominal pesos.

(4) Includes clean fuels investments for gasoline and diesel in our six refineries.

Source: Petróleos Mexicanos.

In 2021, we imported 340.3 thousand barrels per day of gasoline, which represented 59.0% of total domestic demand for gasoline for the year. In 2022, our priority is to increase the production of our oil products by focusing on the maintenance of our existing refineries and the development of the new Dos Bocas refinery.

In addition, we are exploring alternative funding sources for investment projects, such as the reconfigurations of the Miguel Hidalgo refinery in Tula, including residual conversion, and the Antonio Dovalí Jaime refinery in Salina Cruz.

Fuel Quality Project, Gasolines Phase (ULSG)

This project comprises the six refineries of the National Refining System and includes the installation of ULSG post-treatment units. As of December 31, 2021, all gasoline produced in Mexico meets international environmental standards. Units are operating, but still pending completion of complementary works, which are currently suspended due to budgetary restrictions.

Fuel Quality Project, Diesel Phase (ULSD)

This project consists of the construction of five ULSD units with services facilities, including: five hydrogen units, four sulfur recovery units, five sour water treatment units and the reconfiguration of 17 existing units to produce ULSD. As of December 31, 2021, the project remained suspended and capital expenditures are focused on other priorities. For ULSD Tula in particular, the Board of Directors of Petróleos Mexicanos ordered its termination and transfer of assets to the Residual Use project in Tula. As to the other refineries, funding alternatives are under evaluation, to complete the project, which would aid compliance with environmental regulations. The CRE approved extending the deadline to December 2024 to comply with Mexican Official Standard NOM-016-2016, which governs sulfur content in commercial diesel.

Residual Use at the Miguel Hidalgo Refinery in Tula (Formerly Reconfiguration of the Miguel Hidalgo Refinery in Tula)

This project is expected to increase production of refined oil products from 315 thousand barrels per day to 340 thousand barrels per day and improve performance of gasoline and distillates production.

On April 20, 2021 the Board of Directors of Petróleos Mexicanos approved a modification of this project's execution strategy, business objectives, scope and execution timeline. PTI Infraestructura de Desarrollo, S.A. de C.V. was appointed to develop the project. The financing strategy was approved by the Board of Directors of Petróleos Mexicanos on August 19, 2021.

PTI Infraestructura de Desarrollo, S.A. de C.V. enetered into a loan agreement with Bancomext and NAFIN, for US$300 million, to restart the project. As of December 2021, US$157 million of this loan are available in accounts, of which US$69.5 million were paid to cover advance payments and bank fees, and Ps.788.1 million to cover advance payments and administrative costs. Amounts do not include value added tax (VAT).

The project comprises a processing scheme of delayed coking, which maximizes raw material usage, producing gasoline and diesel without asphalt or fuel oil. The scope includes the construction of 3 process units and 4 new service units, upgrade and repair of 7 existing units, auxiliary services, storage infrastructure and integration.

Residual Conversion of the Salamanca Refinery

The reconfiguration of the Ing. Antonio M. Amor refinery in Salamanca, Guanajuato, is focused on the conversion of low-value residuals into high-value distillates. Likewise, it includes the modernization of the lubricants train to produce lubricants of greater value and quality. As of December 31, 2021, the project was 13% complete. The project is currently suspended due to budgetary constraints. We are considering funding alternatives in order to resume the reconfiguration.

Tuxpan Maritime Terminal

This project is intended to help meet the increase in demand for refined products in the metropolitan area of the Mexico Valley. The total cost of the project is Ps. 5,839.1 million approximately, which includes the construction of a pipeline 18-inches in diameter and 109 kilometers long, from Cima de Togo to Venta de Carpio. It also includes five storage tanks located at the Tuxpan Maritime Terminal with a capacity of 100,000 barrels each, a research study to determine the best option for the discharge of refined products from tankers and pipelines into these storage tanks and auxiliary services and integration.

As of April 2018, two of the three key phases of this project were completed, the pre-investment studies phase and the transport phase of the Tuxpan-Mexico pipeline, which is currently operating. The third phase, the storage system, is 97.2% complete. We arranged an extension with the Ministry of Finance and Public Credit to postpone the date by which this final phase may be completed. The five storage tanks have been delivered to the Tuxpan storage and port services terminal and are in operation. Additionally, the booster pumps, firefighting system (including a 55,000-barrel water storage tank and the electrical substation 3), the heating, ventilation, and air conditioning system for the variator room and the measuring skids have been delivered. The integrations, anilines, telecommunication equipment, perimeter wall and control room adjustments were partially delivered.

Rehabilitation of the National Refining System

As part of our efforts to stabilize the operations of our refineries, we initiated a program to rehabilitate the National Refining System. This program aims to contribute to the stabilization of our operations and to repair and maintain our six existing refineries. The rehabilitation program seeks to achieve its objective by addressing critical risks to the facilities, restoring the reliability of the assets and improving the efficiency and stabilization of the crude oil process. Since this program began in September 2019 through December 31, 2021, 53 major repairs and 184 minor repairs were completed in processing plants; in main services 19 major repairs and 86 minor; and in storage tanks 22 major and 39 minor repairs.

New Dos Bocas Refinery

On December 7, 2018, the Board of Directors of Petróleos Mexicanos, in accordance with resolution CA-161/2018, authorized the construction of a new refinery in Dos Bocas in Paraiso, Tabasco, as part of our institutional strategy plan.

On July 2, 2020, the Board of Directors of Petróleos Mexicanos, in accordance with resolution CA-053/2020, authorized the revised business strategy, including FEL II (Front-End Loading II) phase of this project. The FEL methodology is applied to investment project management by using the following three stages: FEL I (visualization), FEL II (conceptualization) and FEL III (definition) each of which must be approved. As of July 2, 2020, the Class IV (+30% to -25%) cost estimate for the project is U.S. $8,918.5 million. Class IV estimates correspond to the FEL method and include all projected costs excluding external works, cost escalation, contingency costs and administrative expenses.

Pemex Industrial Transformation is developing the deliverables for the definition phase of the project (FEL III), in order to obtain the necessary corporate approvals from the Board of Directors of Petróleos Mexicanos and other relevant bodies.

The project shows considerable progress. As of December 31, 2021, site preparation is completed, as well as soil improvement and detailed engineering (Phase I). In addition, long lead procurement of modular units continues, and a significant number of them are already on site. The fabrication continues of vertical and spherical tanks that constitutes the storage area of the refinery. Studies and basic engineering services for the 17 process units have been completed.

Gas and Aromatics

Natural Gas and Condensates

All wet natural gas production is directed to our gas processing facilities. As of December 31, 2021, we owned nine facilities.

The following facilities are located in the Southern region:

- *Nuevo Pemex*. This facility contains 13 units that together in 2021 produced 600.8 million cubic feet per day of dry gas, 16.8 thousand barrels per day of ethane, 22.6 thousand barrels per day of liquefied gas, and 9.7 thousand barrels per day of naphtha.
- *Cactus*. This facility contains 22 units that together in 2021 produced 335.7 million cubic feet per day of dry gas, 17.3 thousand barrels per day of ethane, 20.2 thousand barrels per day of liquefied gas, 7.4 thousand barrels per day of naphtha and 20.7 thousand tons of sulfur.
- *Ciudad Pemex*. This facility contains eight units that together in 2021 produced 637.9 million cubic feet per day of dry gas and 78.9 thousand tons of sulfur.
- *La Venta*. This facility contains one unit that in 2021 produced 106.2 million cubic feet per day of dry gas.
- *Matapionche*. This facility contains five units that together in 2021 produced 8.8 million cubic feet per day of dry gas, 0.3 thousand barrels per day of liquefied gas, 0.2 thousand barrels per day of naphtha and 1.7 thousand tons of sulfur.
- The Morelos, Cangrejera and Pajaritos facilities form the Coatzacoalcos gas processing complex (which we refer to as a GPC):
    - *Morelos*. This facility contains one unit that in 2021 produced 7.7 thousand barrels per day of ethane, 12.3 thousand barrels per day of liquefied gas and 3.4 thousand barrels per day of naphtha.
    - *Cangrejera*. This facility contains two units that together in 2021 produced 13.1 thousand barrels per day of ethane, 20.4 thousand barrels per day of liquefied gas and 5.9 thousand barrels per day of naphtha.
    - *Pajaritos*. This facility contains one unit, which was non-operational as of the date of this annual report.

The following facilities are located in the Northern region:

- *Burgos*. This facility contains nine units that together in 2021 produced 323.4 million cubic feet per day of dry gas, 6.8 thousand barrels per day of liquefied gas and 5.8 thousand barrels per day of naphtha.
- *Poza Rica*. This facility contains five units that together in 2021 produced 34.7 million cubic feet per day of dry gas, 1.0 thousand barrels per day of liquefied gas and 0.4 thousand barrels per day of naphtha.
- *Arenque*. This facility contains three units that together in 2021 produced 22.2 million cubic feet per day of dry gas.

Petrochemical Complexes

In addition to our gas processing facilities, we also own the following two petrochemical complexes:

- *Independencia*. The Independencia petrochemical complex consists of two units and is located in the Central region. In 2021, this complex produced 148.5 thousand tons of methanol in its first unit and 6.8 thousand tons of petrochemical specialties in its second unit.
- *Cangrejera*. The Cangrejera petrochemical complex consists of five units and an aromatics line and is located in the Southern region. In 2021, this complex produced 474.6 thousand tons of aromatics and derivatives and 276.9 thousand tons of other petrochemical products (butanes, hexane, heptane, hydrogen, pentanes, BTX liquids, petroleum products, naphtha gas, octane-based gasoline and heavy naphtha).

The following tables set forth our processing capacity, as well as our total natural gas processing and production, for the five years ended December 31, 2021.

Gas and Aromatics' Processing and Production Capacity[1]

	Year ended December 31,				
	2021	2020	2019	2018	2017[4]
	(in millions of cubic feet per day, except where otherwise indicated)				
Sweetening plants					
Sour condensates[2]	144	144	144	144	144
Sour natural gas	4,523	4,523	4,523	4,523	4,523
Natural gas liquids recovery plants					
Cryogenics	5,912	5,912	5,912	5,912	5,912
Natural gas liquids fractionating[2]	569	569	569	569	569
Processing of hydrosulfuric acid	229	219	219	229	219
Aromatic compounds and derivatives (Cangrejera and Independencia)[3]	1,734	1,734	1,734	1,734	1,734

(1) Production capacity refers to aromatic compounds and derivatives.
(2) In thousands of barrels per day.
(3) In thousands of metric tons per year.
(4) Values of our CCR reforming unit were updated in 2017.

Source: Pemex BDI.

Natural Gas, Condensates and Aromatics' Processing and Production[1]

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in millions of cubic feet per day, except where otherwise indicated)					(%)
Processing						
Wet gas	2,628.2	2,765.4	2,826.3	2,951.9	3,237.3	(5.0)
Sour gas	2,224.6	2,327.6	2,395.6	2,492.5	2,687.7	(4.4)
Sweet gas[2]	403.6	437.8	430.7	459.5	549.6	(7.8)
Condensates[3][4]	14.0	22.6	22.4	27.4	32.4	(38.1)
Gas to natural gas liquids extraction	2,306.0	2,497.4	2,651.2	2,781.7	3,199.5	(7.7)
Wet gas	2,306.0	2,497.4	2,651.2	2,781.7	3,086.3	(7.7)
Reprocessing streams[5]	—	—	—	—	113.2	—
Production						
Dry gas[6]	2,080.3	2,245.2	2,305.0	2,421.7	2,666.7	(7.3)
Natural gas liquids[4][7]	171.1	207.4	221.3	240.1	280.3	(17.5)
Liquefied petroleum gas[4][8]	92.2	100.5	107.6	122.2	144.3	(8.3)
Ethane[4]	54.8	70.8	76.8	84.8	101.3	(22.6)
Naphtha[4]	32.7	40.5	42.9	43.3	51.8	(19.3)
Sulfur[9][10]	182.9	265.1	376.6	442.6	551.3	(31.0)
Methanol[9]	148.5	138.1	141.5	148.4	115.8	7.5
Aromatic compounds and derivatives[9][11]	474.6	336.4	919.6	569.5	622.0	41.1
Others[9][12]	283.7	233.5	496.5	216.5	225.5	21.5

Note: Numbers may not total due to rounding.
GPC= Gas Processing Complex
(1) Excludes operations of our exploration and production segment, which produced 4,670.5 million cubic feet per day in 2021.
(2) Includes sweet vapor from condensates.
(3) Includes internal streams.
(4) In thousands of barrels per day.
(5) Reprocessing of pipeline dry gas at the Pajaritos cryogenic plant
(6) Includes ethane reinjected into the natural gas stream.
(7) Includes stabilized condensates, reprocessing streams from the Cangrejera petrochemical complex and other streams for fractionating.
(8) Production from GPC, refineries and transfers from Pemex Exploration and Production.
(9) In thousands tons.
(10) Production of gas processing GPCs and refineries.

(11) Includes aromine 100, benzene, high octane hydrocarbon, toluene and xylene.
(12) Includes butanes, petrochemical specialties, pentanes, hexane, hydrogen, BTX liquids, isopentanes and petroleum products, naphtha gas, petrol octane base and heavy naphtha.

Source: Pemex BDI.

In 2021, we processed 2,628.2 million cubic feet per day of wet natural gas, of which 2,224.6 million cubic feet per day was wet sour gas and 403.6 million cubic feet per day was wet sweet gas. This figure is 5.0% lower than the processed gas in 2020, which was 2,765.4 million cubic feet per day, due to a reduction in the wet gas process level as a consequence of a lower supply of wet gas from Pemex Exploration and Production.

We process sour and sweet condensates from our exploration and production segment in order to obtain stabilized natural gas liquids and also to recover liquid hydrocarbons obtained from the processing of sweet natural gas. In addition, we obtain liquids from internal streams and hydrocarbons condensed in sour wet gas pipelines. Our production of natural gas liquids, including stabilized condensates, reprocessing and other fractionating streams, decreased by 17.5% from 207.4 thousand barrels per day in 2020 to 171.1 thousand barrels per day in 2021.

We process sour condensates, which have a higher sulfur content, to produce stabilized sweet condensates. The volume of sour condensates we processed and internal streams of our gas and aromatic compound sub-segment totaled 14.0 thousand barrels per day in 2021, a 38.1% decrease from the 22.6 thousand barrels per day processed in 2020. We also process sweet condensates at our Burgos facilities to produce light and heavy natural gasoline.

The production of sulfur totaled 182.9 thousand tons in 2021, a 31.0% decrease from 265.1 thousand tons in 2020. This decrease was mainly influenced by lower production at Ciudad Pemex and Nuevo Pemex gas processing complexes, due to the shutdown of their sulfur recovery units for corrective maintenance.

The production of aromatic compounds and derivatives totaled 474.6 thousand tons in 2021, a 41.1% increase from 336.4 thousand tons in 2020, as a result of the increased operating time of the Catalytic Reforming Cycle unit at La Cangrejera petrochemical complex.

Over the five years ended December 31, 2021, the value of our domestic sales was distributed as follows:

Value of Gas and Aromatics' Domestic Sales[1]

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in millions of pesos)[2]					(%)
Natural gas	Ps. 58,168.5	Ps. 31,815.2	Ps. 41,735.5	Ps. 62,355.4	Ps. 74,287.7	82.8
Liquefied petroleum gas	59,786.0	30,819.9	32,161.8	52,053.6	49,137.3	94.0
Ethane[3]	2,179.8	1,854.6	2,365.0	3,203.4	2,989.7	17.5
Heptane	—	2.4	26.8	9.5	0.9	(100.0)
Propane	119.9	81.0	91.7	148.2	111.6	48.0
Light naphtha	154.8	117.0	212.7	221.4	158.8	32.3
Heavy naphtha	918.7	666.7	833.2	708.6	429.3	37.8
Sulfur	715.7	339.4	534.3	766.0	540.2	110.9
Methanol	1,171.5	797.6	818.7	1,089.9	806.9	46.9
Aromatic compounds and derivatives[4]	1,611.5	1,156.2	1,802.0	1,759.8	1,673.1	39.4
Others[5]	587.4	303.0	258.9	296.1	308.5	93.9
Total	**Ps. 125,413.8**	**Ps. 67,953.0**	**Ps. 80,840.6**	**Ps. 122,611.9**	**Ps. 130,444.0**	**84.6**

Note: Numbers may not total due to rounding.
(1) Excludes value added tax.
(2) Figures are stated in nominal pesos.
(3) In January 2016, ethane supply to Braskem-IDESA began.
(4) Includes aromine 100, benzene, toluene and xylene.
(5) Includes petrochemical specialties, isopropanol, hexane, pentane and naphtha gas.

Source: Pemex BDI.

The volume of our domestic sales of gas and aromatics for the five-year period ended December 31, 2021 was distributed as follows:

Volume of Gas and Aromatics' Domestic Sales

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs 2020
	(in thousands of barrels per day, except where otherwise indicated)					(%)
Natural gas[1]	1,170.2	1,313.6	1,604.4	2,064.3	2,623.0	(10.9)
Liquefied petroleum gas	151.2	143.9	149.5	163.6	169.8	5.1
Ethane	30.3	45.6	51.5	51.0	59.9	(33.6)
Heptane	–	0.2	1.9	0.5	0.1	(100.0)
Propane	9.2	11.2	11.5	11.8	11.3	(17.9)
Heavy naphtha[2]	86.1	97.2	95.2	69.5	56.2	(11.4)
Light naphtha[2]	13.6	20.0	27.4	21.3	19.9	(32.0)
Sulfur[2]	209.5	273.8	382.5	450.5	529.9	(23.5)
Methanol[2]	109.7	120.5	107.1	106.0	100.8	(9.0)
Aromatic compounds and derivatives[2][3]	93.1	94.3	120.0	101.6	111.3	(1.3)
Others[2][4]	26.6	29.1	26.7	22.8	28.2	(8.6)

Note: Numbers may not total due to rounding.
(1) In millions of cubic feet per day.
(2) In thousands tons.
(3) Includes aromine 100, benzene, styrene, toluene and xylene.
(4) Includes petrochemical specialties, isopropanol, hexane, pentane and naphtha gas.
Source: Pemex BDI.

In 2021, the value of our domestic sales in gas and aromatics increased by 84.6% as compared to 2020, reaching Ps. 125,413.8 million. This increase was a result of the increase in international reference prices.

Domestic sales of natural gas decreased by 10.9%, as compared to 2020, from 1,313.6 million cubic feet per day in 2020 to 1,170.2 million cubic feet per day in 2021. This decrease was mainly because private companies have the option to purchase natural gas from other marketers. To reverse the loss of the natural gas market, for the July 2021-June 2022 cycle, a commercial strategy was designed based on maintaining competitive prices in the domestic market to recover customers that once belonged to Pemex.

In 2021, domestic sales of liquefied petroleum gas increased by 5.1% compared to 2020, from 143.9 thousand barrels per day in 2020 to 151.2 thousand barrels per day in 2021. As of April 2021, a new contractual nomination period began with LPG clients and adjustments were made to the commercial strategy to make it more attractive and increase market share.

Internal sales of sulfur decreased by 23.5%, as compared to 2020, from 273.8 thousand tons in 2020 to 209.5 thousand tons in 2021. This decrease was mainly due to a lower supply of sulfur from our gas processing facilities.

Internal sales of aromatics decreased by 1.3%, compared to 2020, from 94.3 thousand tons in 2020 to 93.1 thousand tons in 2021. The decrease in sales of aromatics and derivatives was due to lower demand for these products.

Subsidiaries of Pemex Industrial Transformation

Pemex Industrial Transformation conducts certain management, real estate and distribution activities through its subsidiaries and through certain joint ventures. The following table lists its subsidiaries, their principal operating activities and Pemex Industrial Transformation's ownership interest as of December 31, 2021.

Subsidiaries of Pemex Industrial Transformation[1]

Subsidiary	Principal Activity	Ownership Interest (%)
Mex Gas Internacional, S.L.[2]	Holding company	100.00
Terrenos para Industrias, S.A.	Real estate holding company	100.00
PTI Infraestructura de Desarrollo, S.A. de C.V.[3]	Dos Bocas refinery project development company	99.99
PPQ Cadena Productiva, S.L.[4]	No staff, no operations	100.00

(1) As of December 31, 2021.
(2) Mex Gas Internacional, S.L. consolidates its financial statements with those of Petróleos Mexicanos. See Note 5 to our consolidated financial statements included herein.
(3) PTI Infraestructura de Desarrollo, S.A. de C.V consolidates its financial statements with those of Petróleos Mexicanos. See Note 5 to our consolidated financial statements included herein.
(4) Under Pemex´s subsidiaries reorganization. The company will be liquidated, has enough resources to do so, and no debt.
Source: Pemex Industrial Transformation

Divestitures

On July 14, 2018, the Board of Directors of Petróleos Mexicanos authorized the divestiture of our 5% indirect participation in TAG Pipelines Sur, S. de R. L. de C. V. As of December 31, 2021, this operation was still in progress. The subsidiary holding company continues to evaluate fiscal, financial and corporate matters relevant to the divestment.

Natural Gas Hedging Operations

We can offer, as a value-added service, hedging contracts to our domestic customers to protect them against fluctuations in the prices of natural gas. As of December 31, 2021, there were no DFIs since all the DFIs of its portfolios expired in 2019. For information on hedging contracts offered to our domestic natural gas customers, see "Item 11—Quantitative and Qualitative Disclosures about Market Risk."

Gas and Aromatics Capital Expenditures and Budget

Our gas and aromatics business invested Ps. 1,228 million in capital expenditures in 2021 and has budgeted Ps. 3,909 million in capital expenditures for 2022.

The following table sets forth our gas and aromatics business' capital expenditures, excluding non-capitalizable maintenance, for each of the three years ended December 31, 2021, and the budget for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to capital expenditure amounts included in our consolidated financial statements prepared in accordance with IFRS.

Gas and Aromatics' Capital Expenditures

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Gas and Aromatics				
Maintenance of the New Pemex GPC 2018-2022	Ps. 547	Ps. 418	Ps. —	Ps. 1,528
Maintenance to the Cactus GPC 2018-2022	276	124	—	1,046
Maintenance of the Fractionation Plant I of the GPC Nuevo Pemex	80	3	14	—
Maintenance of the Gas and Petrochemical Process Center Coatzacoalcos 2018-2022	62	146	—	465
Maintenance of the Poza Rica GPC 2018-2022	37	2	—	39
Modernization of Equipment of Cryogenic Plant 1 of the Ciudad Pemex GPC	23	—	76	—
Cryogenic Maintenance III Nuevo Pemex	22	—	26	13
Maintenance of the Ciudad Pemex GPC 2019-2023	19	3	—	248
Conservation of the Main Services of the GPC Cactus	12	91	22	102
Maintenance of Plants and Auxiliary Services of GPC Burgos	3	—	7	11
Adaptation of Fractionation Plants and Conversion of the Liquids Sweetener at Nuevo Pemex GPC	—	5	61	—
Modernization of Systems and Processing Equipment of GPC La Venta	—	—	18	—
Maintenance of the La Venta GPC 2021	—	—	—	163
Exhaust and Elevated Burners and Integration of GPC Ciudad Pemex	—	—	—	119
Others	147	184	265	175
Total	**Ps. 1,228**	**Ps. 976**	**Ps. 489**	**Ps. 3,909**

Notes: Numbers may not total due to rounding.
GPC = Gas Processing Complex.
(1) Amounts based on cash basis method of accounting.
(2) Amended budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.
(3) Figures are stated in nominal pesos.
Source: Petróleos Mexicanos.

Ethane Supply Contract

On February 19, 2010, we entered into a contract to supply 66,000 barrels per day of ethane to the Etileno XXI project, a petrochemical complex in Nanchital, Veracruz that produces ethylene and polyethylene. The Etileno XXI project commenced operations on March 18, 2016. The Etileno XXI project is owned and operated by Braskem IDESA, S.A.P.I. (Braskem IDESA).

On February 26, 2021, Pemex Industrial Transformation entered into an amendment agreement with Braskem IDESA to supply 30,000 barrels per day of ethane.

During 2021, we supplied 30,294 barrels per day of ethane for a total of Ps. 2,179.8 million under this contract.

Ethylene and Derivatives

Our ethylene and derivatives line of business' main objectives include the production, distribution and marketing of ethane and propylene derivatives. In 2021, we produced a total of 854.6 thousand tons of petrochemical products, a 26.0% decrease from the 1,154.1 thousand tons of petrochemical products produced in 2020. This decrease was mainly due to the fact that derivatives plants operated at low capacity due to operational interruptions, problems in auxiliary services.

Our ethylene line of business manufactures several petrochemical products, including:

- ethane derivatives, such as ethylene, polyethylene, ethylene oxide and glycols;

- propylene and derivatives; and
- others such as oxygen, nitrogen, hydrogen and butadiene, among other products.

Capacity

- *Cangrejera Petrochemical Complex*: This complex is located in the Southern region of the country and has five units and a line of aromatics.
- *Morelos Petrochemical Complex*: This complex is located in the Southern region of the country and has six units and auxiliary services.
- *Pajaritos Petrochemical Complex*: This complex is located in the Southern region of the country, has an ethylene plant and has not operated since 2016.

In 2021, the Cangrejera and Morelos complexes together produced 516.3 thousand tons of ethane derivatives, 5.2 thousand tons of propylene and derivatives, and 333.1 thousand tons of other products.

- *Pajaritos Refrigerated Ethylene Shipping Terminal*: We imported ethane through this terminal until mid-November 2020. In 2021, we no ethane imports were made.

Total production capacity of our operating plants for the five years ended December 31, 2021 was distributed among our facilities as set forth below.

Ethylene and Derivatives' Production Capacity

	Year ended December 31,				
	2021	2020	2019	2018	2017
	(in thousands of tons)				
Petrochemical Facility					
Cangrejera[(1)]	1,321.3	1,321.3	1,321.3	1,321.3	1,321.3
Morelos	2,277.2	2,277.2	2,277.2	2,277.2	2,277.2
Pajaritos[(2)]	207.0	207.0	207.0	207.0	—
Total	**3,805.5**	**3,805.5**	**3,805.5**	**3,805.5**	**3,598.5**

Notes: Numbers may not total due to rounding.
(1) Our ethylene and derivatives line of business' capacity in Cangrejera does not include the production capacity of aromatics and derivatives.
(2) At the end of 2018, the assets of the Pajaritos petrochemical complex were transferred to Pemex because the alliance with Petroquímica Mexicana de Vinilo (PMV) was dissolved.
Source: Pemex BDI.

Production

The following table sets forth our ethylene production for the five years ended December 31, 2021.

Ethylene's Production[(1)]

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in thousands of tons)					
Ethane derivatives	516.3	724.0	1,104.9	1,304.8	1,276.8	(28.7)
Propylene and derivatives	5.2	7.9	11.8	16.5	12.9	(34.2)
Others[(2)]	333.1	422.2	495.9	510.3	598.2	(21.1)
Total	**854.6**	**1,154.1**	**1,612.6**	**1,831.6**	**1,887.9**	**(26.0)**

Note: Numbers may not total due to rounding.

(1) Figures include petrochemical products used as raw material to produce other petrochemicals.
(2) Includes carbon dioxide, butadienes, polyethylene waxes, hydrogen, ethylene pyrolysis liquids, nitrogen, oxygen and polyethylene by-products.

Source: Pemex BDI.

In 2021, the total production of our ethylene business decreased by 26.0%, as compared to 2020, from 1,154.1 thousand tons in 2020 to 854.6 thousand tons in 2021. This decrease was mainly due to operational and auxiliary services problems at the derivatives units.

Domestic Sales

The following table sets forth our ethylene domestic sales for the five years ended December 31, 2021.

Value of Ethylene's Domestic Sales[1]

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in millions of pesos)[2]					(%)
Ethane derivatives	Ps. 6,310.7	Ps. 6,042.6	Ps. 8,951.4	Ps. 12,472.8	Ps. 12,252.7	4.4
Propylene and derivatives	39.4	32.9	114.8	314.4	340.7	19.8
Others[3]	30.4	30.4	56.5	45.9	28.3	—
Total	**Ps. 6,380.5**	**Ps. 6,105.9**	**Ps. 9,122.7**	**Ps. 12,833.1**	**Ps. 12,621.7**	**4.5**

Note: Numbers may not total due to rounding.
(1) Excludes value added tax.
(2) Figures are stated in nominal pesos.
(3) Includes carbon dioxide, polyethylene waxes, nitrogen and oxygen.
Source: Pemex BDI.

In 2021, the value of our domestic sales increased by 4.5% as compared to 2020, from Ps. 6,105.9 million in 2020 to Ps. 6,380.5 million in 2021 as a result of an increase in the reference prices of ethylene derivatives.

Sales to other Subsidiary Entities

The following table sets forth the intercompany sales of petrochemical products for the five years ended December 31, 2021.

Ethylene's Intercompany Sales[1]

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in millions of pesos)[2]					(%)
Ethane and derivatives	—	Ps. 0.5	Ps. 3.8	Ps. 2.5	Ps. 1.1	(100.0)
Others[3][4]	—	—	—	62.0	284.2	—
Total	**—**	**Ps. 0.5**	**Ps. 3.8**	**Ps. 64.5**	**Ps. 285.3**	**(100.0)**

Note: Numbers may not total due to rounding.
(1) Excludes value added tax.
(2) Figures are stated in nominal pesos.
(3) Includes hydrogen, ethylene pyrolysis liquids, monoethylene glycol pure, nitrogen and anhydrous ammonia.
(4) Figures do not consider sales to Pemex Industrial Transformation as of July 1, 2019.
Source: Pemex BDI.

In 2021, our intercompany ethane and derivatives sales decreased by 100.0% as compared to 2020.This decrease was due to the fact that there were no sales of triethylene glycol to Pemex Exploration and Production.

Ethylene Capital Expenditures and Budget

Our ethylene business invested Ps. 498 million in capital expenditures in 2021 and has budgeted Ps. 705 million for capital expenditures in 2022.

The following table sets forth our ethylene business' capital expenditures, excluding non-capitalizable maintenance, for each of the three years ended December 31, 2021, and the budget for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to capital expenditure amounts included in our consolidated financial statements prepared in accordance with IFRS.

Ethylene's Capital Expenditures

	Year ended December 31[1]			Budget
	2021	2020	2019	2022[2]
			(in millions of pesos)[3]	
Ethylene[4]				
Acquisition of Catalysts for Pemex Ethylene Plants 2017-2019	Ps. 81	Ps. —	Ps —	Ps. —
Maintenance for the Sustaining of the Operational Capacity of the Process Plants of the PC Morelos 2020	74	—	—	87
Maintenance Program of the Capacity of the Low Density Polyethylene Plant at Cangrejera PC	63	47	63	—
Maintenance for the Sustaining of the Operational Capacity of the Auxiliary Services Plants of the PC Cangrejera	36	—	—	204
Maintaining the Production Capacity of Ethylene Oxide Plant 2015-2017 at Morelos PC	30	12	62	—
Maintenance Program of the Ethylene Plant at Cangrejera PC	20	3	4	—
Maintaining the Production Capacity of the Swing Plant 2015-2017 at Morelos PC	19	4	22	—
Maintaining the Production Capacity of Auxiliary Services at Morelos PC	18	47	—	—
Maintenance to the PC Independencia 2019-2023	6	5	—	76
Maintenance Program for the Production Capacity of the Ethylene Oxide Plant at Cangrejera PC	5	—	2	—
Modernization of Fire Protection Network at Cangrejera PC	1	2	16	2
Maintenance of the Production Capacity of the Asahi Plant 2015-2017 at Morelos PC	1	—	14	—
Sustainability of the Production Capacity of the Ethylene Plant at Morelos PC	—	—	26	—
Maintaining the Production Capacity of the Mitsui Plant 2015-2017 at Morelos PC	—	—	8	—
Others	143	17	1	336
Total	**Ps. 498**	**Ps. 137**	**Ps. 219**	**Ps. 705**

Notes: Numbers may not total due to rounding. PC = Petrochemical Complex.
(1) Amounts based on cash basis method of accounting.
(2) An adjustment to the original budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.
(3) Figures are stated in nominal pesos.
(4) Capital expenditures were made for certain projects in years following the original term indicated in the project title.
Source: Petróleos Mexicanos.

Fertilizers

Prior to January 1, 2021, Pemex Fertilizers operated as an additional productive state-owned subsidiary. As of January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation. Therefore, our fertilizers segment operates since January 1, 2021 as a line of business of Pemex Industrial Trnasformation.

Our fertilizers business integrates the ammonia production chain up to the point of sale of fertilizers, including agricultural and industrial nitrates, phosphate fertilizers and acids, which are produced by Grupo Fertinal, S.A. de C.V.

With this line of business, we intend to integrate the production chain from natural gas to ammonia to fertilizers through the integration of our Cosoleacaque petrochemical complex.

Capacity

As of December 31, 2021, we owned four ammonia plants, one of which resumed operations in December 2019 after undergoing major maintenance. Three other plants are scheduled to undergo maintenance and come back into operation in a staggered manner between 2023 and 2027. The scheduling of this rehabilitation depends on the availability of budgetary resources.

The total ammonia production capacity of our operating plants for the years ended December 31, 2021 was distributed among our facilities as set forth below:

Fertilizers' Total Capacity

Petrochemical Complexes	Year ended December 31, 2021	2020	2019
	(thousands of tons)		
Cosoleacaque (ammonia)	1,440	1,440	1,440

Source: Pemex Industrial Transformation.

Production

The following table summarizes the annual production of our fertilizers segment for the three years ended December 31, 2021.

Fertilizers' Production

	Year ended December 31, 2021	2020	2019	2021 vs. 2020
	(thousands of tons)			(%)
Methane Derivatives				
Ammonia	243.9	136.4	—	78.8
Carbon dioxide	402.6	282.7	6.5	42.4
Total	**646.5**	**419.1**	**6.5**	**54.3**

Note: Numbers may not total due to rounding.
Source: Pemex BDI.

Total annual production of methane derivatives in 2021 increased by 54.3%, from 419.1 thousand tons in 2020 to 646.5 thousand tons in 2021. This increase was mainly due for the continued operation of the ammonia VI unit of the Cosoleacaque petrochemical complex.

Sales of Fertilizers

The following table sets forth the value of our domestic sales of our fertilizers segment for the three years ended December 31, 2021.

Value of Fertilizers' Domestic Sales[1]

	Year ended December 31,			
	2021	2020	2019	2021 vs. 2020
	(in millions of pesos)[2]			(%)
Methane Derivatives				
Ammonia	Ps. 4,910.0	Ps. 1,890.9	Ps. 3,642.8	159.7
Carbon dioxide	46.8	29.4	—	59.2
Total	**Ps. 4,956.8**	**Ps. 1,920.3**	**Ps. 3,642.8**	**158.1**

Note: Numbers may not total due to rounding.
(1) Excludes value added tax.
(2) Figures are stated in nominal pesos.
Source: *Pemex BDI.*

In 2021 the value of domestic sales in our fertilizers segment increased by 158.1%, from Ps. 1,920.3 million in 2020 to Ps. 4,956.8 million in 2021. This result is explained by the increase in sales volume. Additionally, ammonia reference prices are at an all-time high due to the increase in the price of natural gas.

Volume of sales

The following table sets forth the value of our domestic sales for the three years ended December 31, 2021.

Volume of Fertilizers' Domestic Sales

	Year ended December 31,			
	2021	2020	2019	2021 vs. 2020
	(thousands of tons)			(%)
Methane Derivatives				
Ammonia	341.7	284.3	581.9	20.2
Carbon dioxide	226.1	150.3	0.1	50.4
Total	**567.8**	**434.6**	**582.0**	**30.6**

Note: Numbers may not total due to rounding.
Source: *Pemex BDI.*

Fertilizers Capital Expenditures

Our fertilizers segment invested Ps. 96 million in capital expenditures in 2021 and has budgeted Ps. 936 million for capital expenditures in 2022.

The following table sets forth our fertilizers segment's capital expenditures, excluding non-capitalizable maintenance, for each of the three years ended December 31, 2021, and the budget for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to capital expenditure amounts included in our consolidated financial statements prepared in accordance with IFRS.

Fertilizers' Capital Expenditures

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Fertilizers [4]				
Maintaining the Production Capacity of Ammonia Plant VII and its Auxiliary Services at Cosoleacaque PC	Ps. 48	Ps. 17	Ps. 5	Ps. 26
Maintenance to Transportation, Handling and Storage Areas at Cosoleacaque PC	45	100	111	256
Rehabilitation of the Ammonia Plant No. V, at Cosoleacaque PC	3	—	5	—
Maintenance to Receipt, Storage and Distribution Areas at Salina Cruz Refrigerated Ammonia Terminal	1	20	54	129
Maintenance of Refrigeration and Ammonia Storage Plant No. 2 of the Pajaritos Refrigerated Terminal	—	12	4	—
Maintenance to Cryogenic Ammonia Storage Plant No. 1 at Pajaritos Refrigerated Terminal	—	5	1	384
Rehabilitation of Ammonia Plant IV and Integration and Auxiliary Services for Cosoleacaque PC	—	11	—	—
Maintaining the Production Capacity of Ammonia Plant VI at Cosoleacaque PC	—	8	—	—
Maintenance to Storage and Distribution Areas at Cosoleacaque PC	—	2	—	—
Rehabilitation of Primary Reformers and Auxiliary Ammonia Plant VI and VII at Cosoleacaque PC	—	—	23	—
Sustainability of the Production Capacity of AmmoniaPlant VI at Cosoleacaque PC	—	—	—	140
Total	**Ps. 96**	**Ps. 175**	**Ps. 203**	**Ps. 936**

Notes: Numbers may not total due to rounding.
PC = Petrochemical Complex.

(1) Amounts based on cash basis method of accounting.
(2) An adjustment to the original budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.
(3) Figures are stated in nominal pesos.
(4) Prior to January 1, 2021, Pemex Fertilizers operated as an additional productive state-owned subsidiary. As of January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation.

Source: Petróleos Mexicanos.

Pro-Agroindustria, S.A. de C.V. Complex

In 2014, we acquired a non-operating nitrogen fertilizer production facility located in Pajaritos, Veracruz. After the acquisition, we initiated a major rehabilitation project that involved the restoration of our rotating, static and mechanical equipment and the rehabilitation of a carbon dioxide compression station and pipelines for its transportation. The rehabilitation works focused on the Urea Plants and was completed in the second quarter of 2018. Although the operational tests began at that time, production could not be stabilized because of the discontinuous operation of our Cosoleacaque petrochemical complex due to a shortage of natural gas for use as raw material, which led to an insufficient supply of ammonia and carbon dioxide.

Continuous production was achieved in November 2020 and, although it was stopped in the second half of December 2020 due to interruption in the supply of raw materials, operations at the Urea I plant were restarted in March 2021. There was a total annual production during 2021 of 117,387 tons of urea, with delivery of product for federal programs to support national producers and for other national clients. The production forecast for 2022 is more than 250,000 tons, supported by investments that will be made in order to improve the current operating conditions of the plants.

Grupo Fertinal, S.A. de C.V.

Grupo Fertinal, S.A. de C.V. produces fertilizers, primarily phosphates, as well as acids and other agricultural and industrial nitrates, and operates an industrial complex located in Lázaro Cárdenas, Michoacán.

We believe we are in a position to offer a wide range of fertilizers, nitrogen and phosphates at competitive prices. We expect the development of new distribution channels to bring the supply of ammonia and fertilizers closer to industrial and agricultural producers throughout the country.

Grupo Fertinal, S.A. de C.V.'s total production capacity for the three years ended December 31, 2021 is as set forth below.

Grupo Fertinal, S.A. de C.V.'s Total Capacity

	Year ended December 31,		
	2021	2020	2019
	(thousands of tons)		
Nitrate and phosphates	1,252	1,109	1,178

Source: Grupo Fertinal, S.A. de C.V. Group

Grupo Fertinal, S.A. de C.V.'s total production for the three years ended December 31, 2021 is set forth below.

Grupo Fertinal, S.A. de C.V.'s Production

	Year ended December 31,			
	2021	2020	2019	2021 vs. 2020
	(thousands of tons)			(%)
Phosphates	711.8	730.4	783.9	(2.5)
Nitrate	190.2	164.9	200.7	15.0
Others	24.5	11.7	1.4	109.4
Total	**926.5**	**907.0**	**986.0**	**2.2**

Source: Grupo Fertinal, S.A. de C.V. Group

The following table sets forth the value of Grupo Fertinal, S.A. de C.V.'s domestic sales for the three years ended December 31, 2021.

Value of Grupo Fertinal, S.A. de C.V.'s Domestic Sales[1]

	Year ended December 31,			
	2021	2020	2019	2021 vs. 2020
	(in millions of pesos)[2]			(%)
Phosphates	Ps. 3,104.6	Ps. 2,437.0	Ps. 2,177.2	27.4
Nitrates	1,282.0	2,013.7	1,076.7	(36.3)
Ammonia	1,386.0	783.7	1,002.5	76.9
Sulfur	251.1	72.2	124.1	247.8
Sulfuric Acid	11.1	10.1	2.1	9.9
Others	6.1	37.4	27.8	(83.7)
Total	**Ps. 6,041.0**	**Ps. 5,354.1**	**Ps. 4,410.4**	**12.8**

Note: Numbers may not total due to rounding.
(1) Excludes value added tax.
(2) Figures are stated in nominal pesos.
Source: Grupo Fertinal, S.A. de C.V. Group.

The increase in our sales in 2021 was mainly due to higher volume in domestic phosphates sales and higher margins due to the appreciation of fertilizer prices in the global market beginning in the last quarter of 2020. Nevertheless, the average reference price for DAP in 2021 was 107.7% higher than the reference price in 2020.

In 2021, our average operating capacity was 76.5% of our total production capacity. Due to unscheduled shutdowns and cash flow restrictions, we were not able to make the capital expenditures required to fulfill the operational needs of our facilities located in Lázaro Cárdenas, Michoacán and our mining unit located in San Juan de la Costa, Baja California Sur.

Since 2019, together with SADER, Grupo Fertinal, S.A. de C.V. has been a direct participant in the Mexican Government's Fertilizers for Welfare program, providing fertilizers to small agriculture producers. The pilot program launched in 2019 and was implemented in the state of Guerrero. The program represents a change in Grupo Fertinal, S.A. de C.V.'s distribution and

commercialization paradigm in the Mexican fertilizers market. This program was implemented again in 2020 and in 2021; in 2021 the program expanded reaching the states of Guerrero, Morelos, Puebla and Tlaxcala, as well. In total, we distributed 174.9 thousand metric tons of fertilizer to these communities.

Collaboration and Other Agreements

On March 24, 2020, we entered into a collaboration agreement with SADER to carry out activities to support the acquisition, supply and distribution of fertilizers and the provision of technical, legal and human resources within the Fertilizers for Welfare program until September 30, 2024. This broad agreement of technological and scientific collaboration is strictly non-commercial, i.e., there is no transfer of resources among the parties.

Logistics

Our logistics segment operates through the productive state-owned subsidiary Pemex Logistics and provides land, maritime and pipeline transportation, storage and distribution services to some of our subsidiaries and to other companies, including Tesoro, local gas stations and distributors, see "—Business Overview— Transport and Distribution" in this Item 4".

Transportation of Crude Oil and Refined Products

During 2021, we injected 1,272.9 thousand barrels per day of crude oil and petroleum products into our pipelines, a 11.6% increase as compared to 2020 when we injected 1,140.6 thousand barrels per day, mainly due to an increase in demand of pipeline transportation services.

During 2021, we injected 125.0 thousand barrels per day of LPG, representing a 6.9% decrease as compared to the 134.2 thousand barrels per day of LPG injected in 2020, due to due to a decrease in the requirements of Pemex Industrial Transformation in the terminals and interconnections associated with the pipeline transport system for liquefied petroleum gas. In addition, we injected 3.1 thousand barrels per day of petrochemicals in 2021, a decrease of 18.4% as compared to the 3.8 thousand barrels per day we injected in 2020. This decrease was mainly due to the decreased demand for isobutane at the Minatitlán and Salina Cruz refineries.

In 2021, we transported a total of 1,952.5 thousand barrels per day of petroleum products: 1,401.0 thousand barrels per day (71.8%) were injected by the pipeline systems, 371.7 thousand barrels per day (19.0%) were transported by land and the remaining 179.8 thousand barrels per day (9.2%) were transported by tankers.

Treatment and Primary Logistic

In 2021, we received an average of 1,240.0 thousand barrels per day of crude oil for treatment, which consists of dehydration and desalination, representing an increase of 1.0% as compared to 1,233.0 thousand barrels per day in 2020.This increase was due to higher crude oil production by Pemex Exploration and Production. During 2021, we delivered an average of 703.0 thousand barrels of crude oil per day to the National Refining System and 369.0 thousand barrels of crude oil per day to the export terminals.

During 2021, we transported an average of 3,192.0 million cubic feet per day of non-processed natural gas through the Altamira, Misión, Santuario and Gas Marino Mesozoico transportation systems, as compared to the 3,250.0 million cubic feet per day in 2020, representing a 2.0% decrease, due to a decrease in non-processed natural gas production by Pemex Exploration and Production. In addition, we transported an average of 13.0 thousand barrels per day of condensate by the Misión and Condensado Terrestre Sur transportation systems compared to 19.8 thousand barrels per day in 2020, a decrease of 34.3% due to the rejection of Pemex Industrial Transformation of product out of quality specifications in the Condensado Terrestre Sur transportation system.

During 2021, we had 24 leak and spill events, none of which were significant.

Open Season

Since 2017, under the guidelines issued by the CRE, Pemex Logistics began participating in "Open Season" auctions, which are intended to be transparent and competitive auctions for access to our pipelines and storage infrastructure, wherein any participant can compete to offer its services.

As a result of the Open Season stages 1.1 and 3.1 assigned in 2017 and 2018 respectively, Pemex Logistics provides services to Tesoro, using our pipeline transport systems and storage terminals in the states of Sonora, Sinaloa, Baja California and Baja California Sur. These contracts include access to the Rosarito-Mexicali, Rosarito-Ensenada, Guaymas-Hermosillo and Guaymas-Ciudad

Obregón polyducts, and the Rosarito, Mexicali and Ensenada storage terminals in Baja California; the La Paz storage terminal in Baja California Sur; the Guaymas, Ciudad Obregón, Hermosillo, Magdalena, Nogales and Navojoa storage terminals in Sonora; and the Mazatlán, Topolobampo and Guamúchil storage terminals in Sinaloa.

On July 10, 2019, the CRE granted Pemex Logistics an extension to present the Open Season proposal regarding the available capacity of the remaining oil product pipeline storage and pipeline transportation systems.

On September 26, 2019, Pemex Logistics presented to the CRE the Open Season proposal for the remaining storage and transportation systems of petroleum products, whose capacity has not been offered and, therefore, is not reserved under a capacity contract, or reserved by Pemex Logistics for its own use. This available capacity was grouped in five systems: the Centro, Madero, Progreso, Salamanca and Veracruz zones. As of the date of this annual report, the CRE has not issued a response.

As a result of the and 3.1of the Open Season, respectively:

- In Stage 3.1, Pemex Logistics entered into a storage service contract expired in December 2021. The Topolobambo terminal contract expired on December 12, 2021, the Culiacán terminal contract expired on December 22, 2021 and for the La Paz and Mazatlan terminal contracts expired on December 31, 2021.
- Agreements were signed to extend the duration of Open season stage 1.1 for three more years in the three storage terminals (Rosarito, Mexicali and Ensenada) and a system of polyducts of the Rosarito area, which are now expected to be completed on October 5, 2023. The remaining contracts for six storage terminals (Guaymas-Hermosillo, Cd. Obregón, Magdalena, Nogales and Navojoa, and a system of polyducts from the Guaymas area, are all expected to be completed on November 14, 2023.

Transport and Distribution

Our pipelines connect crude oil and natural gas production centers with refineries and petrochemical plants, and our storage terminals with Mexico's major cities. At the end of 2021, the pipeline network measured approximately 17,872.3 kilometers in length, of which 13,862.6 kilometers are currently in operation and 4,009.7 kilometers are temporarily out of operation. These pipelines may be temporarily out of operation because of a decrease in the production of a field where the pipeline is located or because the transportation service is irregular, which makes its operation unprofitable. Once such circumstances are more favorable, the pipelines may become operational again. As of the date of this annual report, we are analyzing the 1,362.7 kilometers of pipelines that are temporarily out of operation to determine whether and how they may be used in the future.

As of December 31, 2021, the pipeline network of Pemex Logistics was distributed as follows:

Transported Product	Length (km)
Petroleum products	8,460.8
Crude Oil	5,224.8
LP Gas	1,583.1
Chemicals	2,319.5
Petrochemicals	23.0
Fuel Oil	127.5
Jet Fuel	85.1
Water	48.5
Total	**17,872.3**

We have implemented a pipeline integrity management plan, which requires us to maintain detailed documentation on the condition of our pipelines in order to optimize our maintenance investments. The pipeline integrity management plan is based on NOM-027, as well as API RP 1160 for liquid hydrocarbons and ASME B31.8S standards for gas, and includes the following stages:

- collection of detailed logs and the development of a pipeline database;
- categorization and identification of threats that could affect integrity, safety and operation of pipelines;
- identification of critical points in the pipeline;
- risk assessment of the reliability and integrity of pipelines;
- planning and scheduling of maintenance and risk mitigation; and

- continuous monitoring throughout all stages.

We have made considerable progress towards meeting NOM-027 requirements on risk assessment and pipeline integrity. As of December 31, 2021, we have analyzed 100% of our network of logistics pipelines. In addition, we have implemented several measures related to our pipeline integrity management plan, including by collecting information to create pipeline databases.

The results of our risk evaluation are as follows:

High Risk	0.0 kilometers
Medium Risk	7,274.0 kilometers
Low Risk	8,635.0 kilometers

Despite the implementation of our pipeline integrity management plan, we experienced 72 leaks and spills in 2021. The total number of incidents in 2021 represented an increase of 166.7%, as compared to the 27 incidents we experienced in 2020. All of the 72 incidents in our transportation pipelines, were due to failures in the mechanical integrity of the pipelines and corrosion.

The transportation of crude oil, natural gas and other products through the pipeline network is subject to various risks, including risk of leakage and spills, explosions and fuel theft. In 2021, we spent a total of Ps. 508.2 million for the rehabilitation and maintenance of our pipeline network and we have budgeted Ps. 971.0 million for these expenditures in 2022. See "Item 3—Key Information—Risk Factors—Risk Factors Related to our Operations—We are an integrated oil and gas company and are exposed to production, equipment and transportation risks, blockades to our facilities and criminal acts and deliberate acts of terror" and "Item 4—Business Overview—Environmental Liabilities" above.

Fleet Developments

In July of 2013, as part of a plan to modernize the fleet, we signed an agreement with the *Secretaría de Marina Armada de México* (Mexican Navy, or SEMAR), valued at Ps. 3,212.1 million (U.S. $250.0 million), for the construction of 22 vessels for Pemex Industrial Transformation, which formally operated through Pemex Refining. This agreement initially included construction of 16 tugboats, three multipurpose vessels and three barges, but was amended in 2016 to remove the construction of the three barges and to extend the final delivery date to January 2022. On March 26, 2021, the SEMAR and Petróleos Mexicanos agreed to reduce of the scope of the this agreement in two supply orders. This transaction is now valued at Ps. 5,235 million. As of December 31, 2021, the Mexican Navy has delivered 12 tugboats. The remaining five vessels are scheduled for delivery during 2022.

As of December 31, 2021, we owned 16 refined product tankers. We also have 17 tugboats, 3 suppliers, 1,444 tanker trucks and 348 tanker cars, as well as 74 storage and distribution terminals, 10 liquefied gas terminals, five maritime terminals and ten dock operation and maintenance facilities. These facilities, together with our pipeline network, constitute the hydrocarbons transportation and distribution infrastructure.

Our current fleet of refined product tankers includes 16 vessels, twelve of which are owned by Pemex Logistics and four of which are leased under financial leases, with a total transportation capacity of 5,035.5 thousand barrels. 62.5% of our ships are located on the Pacific coast and the other 37.5% are in the Gulf of Mexico. Of the capacity of the ships located on the Pacific coast, 80% is used to transport distillates and 20% is used to transport fuel oil and heavy diesel. Of the capacity of the ships located in the Gulf of Mexico, 83.3% is used for distillates and 16.7% is used for fuel oil and heavy diesel.

Logistics Capital Expenditures and Budget

Our logistics segment invested Ps. 4,468 million in capital expenditures in 2021 and has budgeted Ps. 7,456 million in capital expenditures for 2022.

The following table sets forth our logistics segment's capital expenditures, excluding non-capitalizable maintenance, for each of the three years ended December 31, 2021, and the budget for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to capital expenditure amounts included in our consolidated financial statements prepared in accordance with IFRS.

Logistics' Capital Expenditures

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Logistics				
T M Dos Bocas – CCC Palomas Corridor	Ps. 519	Ps. 91	Ps. 76	Ps. 1,415
Acquisition of 5 Tankers Vessel by Cash and/or by Leasing	460	478	437	165
Maintenance of TM Dos Bocas	415	553	442	119
Maintenance of Pipeline Transportation Systems Permission 7 Crudos	370	90	93	1,154
Replacement of Vessel Tanks Nuevo Pemex I, II, III and IV by Acquisition and/or Leasing	354	370	336	353
Gas Marino-Mesozoico Transportation Systems	333	76	6	1,368
Altamira Integral System Maintenance Case	263	92	43	—
Capitalized Maintenance for the Pajaritos Storage and Port Services Terminal and Pajaritos Storage and Dispatch Terminal	224	—	—	643
Integrity Diagnostics and Adequacy of the Instrumented Safety Systems and the Basic Control of the Southeast Pumping Stations	208	348	147	281
Natural Gas Transportation from Jáltipan to Salina Cruz Refinery	185	—	—	—
Restoration, Standardization and Adaptation of the Docks of the TOMP Pajaritos	120	9	—	—
Operational Reliability in the Assets of the Pipeline Sub-Directorate	112	77	87	14
Maintenance of 7 Storage Terminals of the Pacific Regional Logistics Management: TAD Acapulco, Colima, El Castillo, Lázaro Cárdenas, Manzanillo, Tepic, Zapopan	106	—	—	100
Major Rehabilitations for the Sustaining of the Vessels of the Major Fleet Assigned to Pemex Logistics	104	30	—	73
Restoration, Standardization and Adaptation of the Docks of the TOMP Salina Cruz	91	64	—	—
Maintenance of Pipelines Transportation Systems Permission 5 South, Gulf, Central and West Zones	80	65	43	—
Capitalized Maintenance to 7 Storage Terminals under North Regional Logistics Management: TAD Santa Catarina, Chihuahua, Cd. Juárez, Parral, Saltillo, Gómez Palacio Durango	77	—	—	—
Maintenance of Mission System	54	31	61	65
Capitalized Maintenance to 7 Storage Terminals under Pacific Regional Logistics Management: TAD Rosarito, Ensenada, Mexicali, Topolobampo, Mazatlán, Culiacán and Guamúchil	53	—	—	98
Maintenance of Pipeline Monitoring, Control Systems and Flow Measurement Systems of the National Distribution Network of Pemex Refineries	52	66	54	329
Capitalized Maintenance to 5 TAD under Center Regional Logistics Management: TAD 18 de Marzo, Añil, Barranca del Muerto, San Juan Ixhuatepec and Toluca	51	—	—	64
Acquisition of 1 Tanker in Cash and/or by Financial Lease	42	97	87	—
Capitalizable Maintenance to 5 Storage Terminals of Gulf Regional Logistics Management: TAD Minatitlan, Tapachula, Tuxtla Gutierrez, Villahermosa, and Campeche	28	—	—	—
Rehabilitations of Support Vessels for the Nautical Operation Assigned to Pemex Logistics	25	2	—	11
Maintenance of 7 Storage Terminals under Pacific Regional Logistics. Management: TAD Obregón, Guaymas, Hermosillo, La Paz, Magdalena, Navojoa and Nogales and 2 Storage and Port Services Terminals (TASP) Guaymas and La Paz	25	—	—	25
Capitalizable Maintenance of the Storage Terminal and Port Services in Tuxpan, Veracruz	20	—	—	164
Maintenance of Transportation System by Pipeline, Permission Number 3 Topolobampo	18	11	12	69

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
	(in millions of pesos)[3]			
Maintenance of 5 Terminals: TAD Poza Rica, Tierra Blanca, Jalapa, ... Perote and Veracruz	13	—	—	35

	Year ended December 31,[1]			Budget
	2021	2020	2019	2022[2]
Capitalizable Maintenance to the Storage and Port Services Terminal (TASP): Salina Cruz and marine pipelines of Storage and Port Services Management	9	—	—	321
Renewal of Tugs, Chalanes and Multipurpose Vessels of the Smaller Fleet	—	253	46	—
Maintenance of Safety, Measurement, Control and Automation Systems in Storage and Distribution Terminals	—	57	10	—
Evaluation and Rehabilitation of the Mechanical Integrity of the Poza Rica-Salamanca and Nuevo Teapa- Tula-Salamanca Pipelines	—	5	—	—
Implementation of the SCADA System in 47 Pipeline Transportation Systems	—	—	13	—
Evaluation and Rehabilitation of the Mechanical Integrity of the Pipelines in Northern and Pacific Zones	—	—	2	—
Evaluation and Rehabilitation of the Mechanical Integrity of the Turbosine, Diesel, Gasoline and Fuel Oil Pipelines and Gas Pipelines in the Central Zone	—	—	1	—
Maintenance to the Pipeline Transportation Systems Permission 4 North	—	—	—	32
Maintenance to the Pipeline Transportation Systems Permission 5 Pipeline Petroleum Transportation for the Southern, Central, Western and Gulf Zones	—	—	—	110
Replacement of the Fire-fighting Vehicles with their Useful Life Ended, for Emergency Care at the Pajaritos Storage and Port Services Terminal	—	—	—	107
Maintenance to the Pipeline Transportation Systems Altamira: Pipeline Crude Oil and Gas	—	—	—	65
Maintenance to the Pipeline Transportation Systems Mission: for Gas and Condensates	—	—	—	51
Others	57	90	122	225
Total	**Ps. 4, 468**	**Ps. 2,955**	**Ps. 2,118**	**Ps. 7,456**

Notes: Numbers may not total due to rounding.
TM = *Terminal Marítima* (Marine Terminal).
TOMP = *Terminal de Operación Marítima y Portuaria* (Maritime and Port Operation Terminal).
TAD = *Terminal de Almacenamiento y Distribución* (Storage and Distribution Terminal).

(1) Amounts based on cash basis method of accounting.
(2) An adjustment to the original budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.
(3) Figures are stated in nominal pesos.

Source: Petróleos Mexicanos.

CENAGAS

Pursuant to the Hydrocarbons Law, on August 11, 2014, CENAGAS was created as a decentralized public entity of the Mexican Government to act as the independent administrator of the Integrated Natural Gas System. This system interconnects the infrastructure for the storage and transportation of natural gas across the nation, with the aim of expanding coverage, strengthening security measures and improving the continuity, quality and efficiency in transportation service.

We provide operation and maintenance services and commercial operation services to CENAGAS for 15 of its 21 pipeline subsystems.

During 2021 we obtained Ps. 2,244.1 million from our services provided to CENAGAS.

International Trading

PMI and the PMI Subsidiaries conduct international commercial activities for our crude oil, refined and petrochemical products, with the exception of natural gas, which is marketed directly by Pemex Industrial Transformation. The PMI Subsidiaries' main objectives are to assist in maximizing our profitability and optimizing our operations through international trade. The PMI Subsidiaries facilitate our link with international markets and pursue new business opportunities by marketing PEMEX's required or produced products internationally. PMI and the PMI Subsidiaries manage the international sales of our crude oil and petroleum products and acquire in the international markets the petroleum products required to satisfy domestic demand. Sales of our crude oil are carried out through PMI. Trading of petroleum products in the international markets is carried out through P.M.I. Trading, which also performs third-party trading, transportation and risk management activities in alternative markets (customers and suppliers other than us).

Exports and Imports

PMI purchases crude oil from Pemex Exploration and Production and then sells it to PMI's customers. PMI sold an average of 1,018.4 thousand barrels of crude oil per day in 2021, which represented 58.7% of our total crude oil production, inclusive of condensed crude oil production and exclusive of amounts produced in conjunction with other partners.

The following tables set forth the composition and average prices of our crude oil exports for the periods indicated.

	Year ended December 31,									
	2021		2020		2019		2018		2017	
	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)
Crude Oil Exports (by Volume)										
Olmeca[1] (API gravity of 38°-39°).....	—	—	—	—	—	—	—	—	18.9	1.6
Isthmus (API gravity of 32°-33°)	181.4	17.8	139.7	12.5	4.1	0.4	30.7	2.6	85.8	7.3
Maya (API gravity of 21°-22°).....	796.8	78.3	908.6	81.1	985.0	89.3	1,090.0	92.0	1,053.9	89.8
Altamira (API gravity of 15.0°-16.5°).....	18.6	1.8	18.4	1.6	20.7	1.9	19.9	1.7	15.3	1.3
Talam (API gravity of -15.8º)	21.6	2.1	53.2	4.8	93.5	8.4	43.4	3.7	—	—
Total	**1,018.4**	**100.0**	**1,119.9**	**100.0**	**1,103.3**	**100.0**	**1,184.0**	**100.0**	**1,173.9**	**100.0**

Notes: Numbers may not total due to rounding.
tbpd = thousand barrels per day.
API gravity refers to the specific gravity or density of liquid petroleum products, measured in degrees on the American Petroleum Institute (API) scale. On the API scale, oil with the lowest specific gravity has the highest API gravity. In addition, holding all other factors constant, the higher the API gravity, the greater the value of the crude oil.
(1) During 2018, 2019, 2020 and 2021 we did not export Olmeca crude oil.
Source: PMI operating statistics as of January 10, 2022.

	Year ended December 31,									
	2021		2020		2019		2018		2017	
	(U.S. dollars per barrel)									
Crude Oil Prices										
Olmeca	U.S. $	—	U.S. $	—	U.S. $	—	U.S. $	—	U.S. $	51.79
Isthmus		66.92		37.60		57.12		64.54		50.75
Maya		65.07		36.63		55.75		61.47		46.48
Altamira		61.61		32.06		53.69		57.81		39.45
Talam		63.58		27.60		53.50		59.47		—
Weighted average realized price	U.S. $	65.31	U.S. $	36.24	U.S. $	55.53	U.S. $	61.41	U.S. $	46.79

Source: PMI operating statistics as of January 10, 2022.

Geographic Distribution of Export Sales

As of December 31, 2021, PMI had 18 customers in six countries. In 2021, 56.9% of our crude oil export sales were to customers in the United States, which represents a 2.1% decrease as compared to 2020. Since 2014, primarily as a result of increased availability of light crude oil in the United States and other developing trends in international demand for imported crude oil, we have expanded the scope of our geographic distribution and adapted our strategy to diversify and strengthen the position of Mexican crude oil in the international market. As part of PMI's strategy, in January 2014, we began to export Olmeca crude oil to several European and Asian countries. PMI has not exported Olmeca crude oil since 2018. However, exports of Isthmus crude oil resumed at the end of 2019.

The following table sets forth the geographic distribution of PMI's sales of crude oil exports for the five years ended December 31, 2021. The table also presents the distribution of exports among PMI's crude oil types for those years.

Composition and Geographic Distribution of Crude Oil Export Sales

	Year ended December 31,									
	2021		2020		2019		2018		2017	
	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)
PMI Crude Oil Export Sales to:										
United States and Canada	578.9	56.9	659.6	58.9	609.2	55.2	669.6	56.6	617.2	52.6
Europe	141.9	13.9	162.8	14.5	181.8	16.5	199.1	16.8	219.1	18.7
Asia	297.6	29.2	297.5	26.6	312.3	28.3	311.4	26.3	317.2	27.0
Central and South America	—	—	—	—	—	—	3.8	0.3	20.4	1.7
Total	**1,018.4**	**100**	**1,119.9**	**100**	**1,103.3**	**100**	**1,184.0**	**100**	**1,173.9**	**100**
Olmeca (API gravity of 38°-39°)[1]										
United States and Canada	—	—	—	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	—	—	18.9	1.6
Total	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**18.9**	**1.6**
Isthmus (API gravity of 32°-33°)										
United States and Canada	146.7	14.4	124.6	11.1	2.7	0.2	—	—	4.7	0.4
Others	34.7	3.4	15.1	1.3	1.4	0.1	30.7	2.6	81.1	6.9
Total	**181.4**	**17.8**	**139.7**	**12.4**	**4.1**	**0.3**	**30.7**	**2.6**	**85.8**	**7.3**
Maya (API gravity of 21°-22°)										
United States and Canada	398.9	39.2	474.8	42.4	506.1	45.9	623.9	52.7	597.2	50.9
Others	397.9	39.1	433.8	38.7	478.9	43.4	466.1	39.4	456.7	38.9
Total	**796.8**	**78.3**	**908.6**	**81.1**	**985.0**	**89.3**	**1,090.0**	**92.1**	**1,053.9**	**89.8**

	Year ended December 31,									
	2021		2020		2019		2018		2017	
	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)
Altamira (API gravity of 15.0°-16.5°)										
United States and Canada	18.6	1.8	18.4	1.6	20.7	1.9	19.9	1.7	15.3	1.3
Others	—	—	—	—	—	—	—	—	—	—
Total	**18.6**	**1.8**	**18.4**	**1.6**	**20.7**	**1.9**	**19.9**	**1.7**	**15.3**	**1.3**
Talam (API gravity of 15.8°)										
United States and Canada	14.8	1.5	41.7	3.7	79.7	7.2	25.8	2.2	—	—
Others	6.8	0.7	11.5	1.0	13.8	1.3	17.6	1.5	—	—
Total	**21.6**	**2.2**	**53.2**	**4.7**	**93.5**	**8.5**	**43.4**	**3.7**	**—**	**—**

Notes: Numbers may not total due to rounding.
Tbpd = thousand barrels per day.
API gravity refers to the specific gravity or density of liquid petroleum products, measured in degrees on the API scale. On the API scale, oil with the lowest specific gravity has the highest API gravity. In addition, holding all other factors constant, the higher the API gravity, the greater the value of the crude oil.
(1) During 2021, we did not export Olmeca crude oil.
Source: PMI operating statistics as of January 10, 2022.

In total, we exported 1,018.4 thousand barrels of crude oil per day in 2021 and Pemex Exploration and Production's request, we expect to export 807 thousand barrels of crude oil per day in 2022 (including Maya, Istmo, Altamira and Talam crude oil). We sell crude oil produced by Pemex Exploration and Production under a variety of contractual arrangements. We believe that our proved developed and proved undeveloped reserves will be sufficient to allow us to fulfill our supply commitments.

The following table sets forth the average volume of our exports and imports of crude oil, natural gas and petroleum products for the five years ended December 31, 2021.

Volume of Exports and Imports

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in thousands of barrels per day, except as noted)					(%)
Exports						
Crude Oil:						
Olmeca	—	—	—	—	18.9	—
Isthmus	181.4	139.7	4.1	30.7	85.8	29.9
Maya	796.8	908.6	985.0	1,090.0	1,053.9	(12.3)
Altamira	18.6	18.4	20.7	19.9	15.3	1.1
Talam	21.6	53.2	93.5	43.4	—	(59.4)
Total crude oil	**1,018.4**	**1,119.9**	**1,103.3**	**1,184.0**	**1,173.9**	**(9.1)**
Natural gas[1]	0.8	1.0	1.3	1.4	1.7	(20.0)
Gasoline	6.8	12.2	33.6	37.7	45.0	(44.3)
Other petroleum products and LPG	160.3	127.1	82.8	95.1	113.1	26.1
Petrochemical products[2]	110.5	40.2	71.9	57.8	60.5	174.9
Imports						
Natural gas[1]	904.6	853.1	966.6	1,316.5	1,766.0	6.0
Gasoline	348.6	396.9	544.1	607.0	583.7	(12.2)
Other petroleum products and LPG[1]	207.2	197.3	302.8	378.7	356.1	5.0
Petrochemical products[2]	349.2	386.0	881.3	831.8	332.8	(9.5)

Note: Numbers subject to adjustment because crude oil exports may be adjusted to reflect the percentage of water in each shipment. Numbers may not total due to rounding.
(1) Numbers expressed in millions of cubic feet per day.
(2) In thousands of tons.

Source: PMI operating statistics as of January 10, 2022, and Pemex Industrial Transformation.

Crude oil exports decreased by 9.1% in 2021, from 1,119.9 thousand barrels per day in 2020 to 1,018.4 thousand barrels per day in 2021, mainly due to the National Refining System's process increase. We did not export Olmeca crude oil during 2018, 2019, 2020 and 2021, due to a lack of availability of Olmeca crude oil for export.

We import dry gas, a variety of natural gas, to satisfy shortfalls in our production and to meet demand in areas of northern Mexico that, due to their distance from the fields, can be supplied more efficiently by importing natural gas from the United States. Domestic sales of dry gas decreased by 10.9%, as compared to 2020, from 1,313.6 million cubic feet per day in 2020 to 1,170.2 million cubic feet per day in 2021, mainly due to private companies importing natural gas directly to satisfy their requirements. In 2021, 904.6 million cubic feet per day of natural gas was imported, a 6.0% increase from the 853.1 million cubic feet per day imported in 2020. The growth in imports is explained by the lower availability of direct gas from Pemex Exploration and Production fields and the reduction in dry gas production from cryogenic units.

P.M.I. Trading sells and buys refined and petrochemical products on a *Free on Board*, *Delivered Ex-ship, Cost and Freight, Delivery at Frontier* and *Delivered at Place* basis.

The following table sets forth the value of exports and imports of crude oil, natural gas and petroleum products for the five years ended December 31, 2021.

Value of Exports and Imports[(1)]

	Year ended December 31,					
	2021	2020	2019	2018	2017	2021 vs. 2020
	(in millions of U.S. dollars)					(%)
Exports						
Olmeca	U.S. $ —	U.S. $ —	U.S. $ —	U.S. $ —	U.S. $ 358.1	—
Isthmus	4,431.4	1,921.5	85.2	722.2	1,588.7	130.6
Altamira	416.8	216.2	405.7	419.5	219.8	92.8
Maya	18,925.5	12,179.9	20,043.9	24,455.2	17,880.6	55.4
Talam	501.3	537.4	1,826.6	943.4	—	(6.7)
Total crude oil(2)	**U.S. $ 24,275.0**	**U.S. $ 14,855.0**	**U.S. $ 22,361.4**	**U.S. $ 26,540.3**	**U.S. $ 20,047.2**	**63.4**
Natural gas	0.9	0.4	0.8	1.0	1.3	125.0
Gasoline	154.9	154.9	626.6	813.9	746.9	—
Other petroleum products	3,284.3	1,321.3	1,400.3	1,938.1	1,655.6	148.6
Petrochemical products	68.2	12.7	39.6	39.2	37.8	437.0
Total natural gas, petroleum and petrochemical products	**U.S. $ 3,508.3**	**U.S. $ 1,489.3**	**U.S. $ 2,067.3**	**U.S. $ 2,792.2**	**U.S. $ 2,441.6**	**135.6**
Total exports	**U.S. $ 27,783.3**	**U.S. $ 16,344.3**	**U.S. $ 24,428.7**	**U.S. $ 29,332.5**	**U.S. $ 22,488.8**	69.9

	Year ended December 31,					2021 vs. 2020
	2021	2020	2019	2018	2017	
	(in millions of U.S. dollars)					(%)
Imports						
Natural gas	U.S. $ 2,196.4	U.S. $ 774.1	U.S. $ 1,072.7	U.S. $ 2,043.2	U.S. $ 2,484.1	183.7
Gasoline	10,805.6	8,117.3	15,336.6	18,957.9	15,418.2	33.1
Other petroleum products and LPG	5,422.3	3,613.9	7,983.7	11,159.1	8,505.1	50.0
Petrochemical products	881.0	633.0	658.4	588.8	122.5	39.2
Total imports	**U.S. $ 19,305.3**	**U.S. $ 13,138.3**	**U.S. $ 25,051.4**	**U.S. $ 32,749.0**	**U.S. $ 26,529.9**	**46.9**
Net exports (imports)	**U.S. $ 8,478.0**	**U.S. $ 3,206.0**	**U.S. $ (622.7)**	**U.S. $ (3,416.5)**	**U.S. $ (4,041.1)**	**164.4**

Note: Numbers may not total due to rounding.

(1) Does not include operations with third parties carried out by P.M.I. Trading DAC and PMI-NASA of crude oil, refined products, petrochemicals and liquefied petroleum gas outside of Mexico and resold in international markets. Figures expressed in this table differ from the amounts contained in the Audited Consolidated Financial Statements under "Net Sales" due to differences in the methodology related to the calculation of exchange rates and other minor adjustments.

(2) Crude oil exports are subject to adjustment to reflect the percentage of water in each shipment.

Source: PMI operating statistics as of January 10, 2022, which are based on information in bills of lading, and Pemex Industrial Transformation.

In 2021, imports of natural gas increased in value by 183.7% as compared to 2020, primarily as a result of an increase in the volume of natural gas imports. Imports of gasoline increased in value by 33.1%, despite lower imports of the product in volume, mainly due to higher prices of refined products in the North Coast of the Gulf of Mexico.

The following table describes the composition of our exports and imports of selected refined products for the three years ended December 31, 2021.

Exports and Imports of Selected Petroleum Products

	Year ended December 31,					
	2021		2020		2019	
	(tbpd)	(%)	(tbpd)	(%)	(tbpd)	(%)
Exports						
Liquefied petroleum gas[(1)]	—	—	0.8	0.6	0.7	0.6
Fuel oil	157.5	94.3	109.6	78.7	69.7	59.8
Gasoline	6.8	4.1	12.2	8.7	33.6	28.9
Others	2.8	1.7	16.7	12.0	12.4	10.7
Total	**167.1**	**100.0**	**139.3**	**100.0**	**116.4**	**100.0**
Imports						
Gasoline[(2)]	348.6	62.7	396.9	66.8	544.1	64.3
Fuel oil	—	—	4.3	0.7	12.2	1.4
Liquefied petroleum gas [(1)]	66.9	12.0	53.1	8.9	53.9	6.4
Diesel	101.7	18.3	114.2	19.2	178.1	21.0
Others	38.6	6.9	25.8	4.3	58.6	6.9
Total	**555.8**	**100.0**	**594.3**	**100.0**	**846.9**	**100.0**

Notes: Numbers may not total due to rounding.

tbpd = thousand barrels per day.

(1) Includes butanes and propane.

(2) Includes premium gasoline, regular gasoline, premium components and naphthas

Source: Pemex BDI.

In 2021, exports of petroleum products increased by 20.0%, from 139.3 thousand barrels per day in 2020 to 161.7 thousand barrels per day in 2021, mainly due to an increase in the export volumes of fuel oil of 43.7%. Imports of petroleum products decreased by 6.5% in 2021, from 594.3 thousand barrels per day in 2020 to 555.8 thousand barrels per day in 2021, mainly due to reduced gasoline imports as a result of the increase in domestic production of this fuel to meet domestic demand.

Exports of petroleum products increased in value by 135.6% in 2021, primarily due to the increase in the price of petroleum products. In 2021, imports of petroleum products increased in value, by 46.9%, which is also a consequence of higher refining prices in the Northern Gulf Coast of Mexico. Our net exports of petroleum products for 2021 totaled U.S. $8,478.0 million, which represents a 164.4% increase from our net imports of petroleum products of U.S. $3,206.0 million in 2020.

The Secretary of Energy has entered into certain agreements to reduce or increase crude oil exports and production. See "Item 4—Information on the Company—Trade Regulation, Export Agreement and Production Agreements" below.

Hedging Operations

Certain PMI Subsidiaries have implemented a regulatory framework for risk management with respect to its activities, which consists of policies, guidelines and procedures to manage the market risk associated with its commodity trading activities in accordance with industry best practices, such as: 1) the use of derivative financial instruments (DFIs) for financial risk mitigation purposes; 2) the segregation of duties; 3) valuation and monitoring mechanisms, such as the generation of a daily portfolio risk report, value at risk ("VaR") computation; and 4) VaR limits, both at a global and business unit level and the implementation of stop loss mechanisms. See "Item 11—Quantitative and Qualitative Disclosures About Market Risk."

Gas Stations in the United States

In 2021, as a result of changes in market behavior due to the effects of the COVID-19 pandemic, as well as our strategic business objectives, no commercial changes were implemented for branded service stations in the United States. Additionally, 3 service stations in Texas were de-branded as they were not located in highly attractive market areas for the brand, and 1 service station was added in California, for a combined total of 13 locations (six in the state of Texas and 7 in the state of California) as of December 31, 2021. The fuel supply at these gas stations is derived from the United States wholesale market and the selling prices are subject to local market conditions. The information provided by the operating PEMEX branded gas stations as well as the impact of the COVID-19 pandemic is continually being evaluated in order to implement a commercial strategy that responds to the subset market needs and our strategic objectives.

PEMEX Corporate Matters

In addition to our operating activities that we undertake through the activities of our subsidiary entities and subsidiary companies, we have certain centralized corporate operations that coordinate general labor, safety, insurance and legal matters.

Industrial Safety and Environmental Protection

Our Corporate Office of Planning, Coordination and Performance is responsible for planning, conducting and coordinating programs to:

- foster a company culture of safety, environmental protection and efficient and rational use of energy;
- improve the safety of our workers and facilities;
- reduce risks to residents of the areas surrounding our facilities; and
- reduce the environmental impacts generated by our operations and greenhouse gas emissions.

We intend to further develop industrial safety and environmental programs for each subsidiary entity. The environmental and safety division of each subsidiary entity coordinates closely with the Corporate Office of Planning, Coordination and Performance to promote sustainable performance focused on continuous improvement.

Insurance

We maintain damage and liability insurance coverage for our properties, such as refineries, processing plants and gas processing and distribution centers, pipelines and storage facilities, as well as for all of our offshore assets, such as drilling platforms, rigs, gas gathering systems, as well as for the fleet of vessels for product transportation and support of maritime operations.

Our insurance covers risks of sudden and accidental physical damage to or destruction of our properties, as well as risk of sudden and accidental physical loss, including as a consequence of purposeful terrorist acts and sabotage. This insurance also provides coverage for the contents of pipelines, storage facilities and packaged products, and any of our liabilities arising from such acts. Our insurance also covers extraordinary costs related to the operation of offshore wells, such as control and re-drilling costs, evacuation expenses and liability costs associated with spills. We also maintain protection and indemnity insurance for our full marine fleet, in addition to life insurance for employees, unmanned aircraft, automobile and heavy equipment insurance, cargo and transportation insurance, as well as insurance against all risks in construction for minor works or assemblies on assets in operation, as well as insurance to protect against illegal acts.

In accordance with Mexican law, we have entered into all of our insurance contracts with Mexican insurance carriers. These policies have limits of U.S. $1.8 billion for onshore property, which includes insurance for the entire Deer Park acquisition, U.S. $1.9 billion for offshore property, U.S. $0.3 billion for extraordinary costs related to the operation of offshore wells, U.S. $1.1 billion for onshore and offshore liabilities, U.S. $0.5 billion for offshore terrorist acts and U.S. $0.5 billion for onshore terrorist acts, plus U.S. $1.0 billion for liabilities associated with the operation of vessels.

Limits of insurance policies purchased for each category of risk are determined using professional risk management assessment surveys conducted by international companies on an annual basis and the market capacity available per risk. In addition, in compliance with the regulations enacted in June 2016 by the *Agencia Nacional de Seguridad Industrial y de Protección al Medio Ambiente del Sector Hidrocarburos* (National Agency for Industrial Safety and Environmental Protection of the Hydrocarbons Sector, or ASEA), we maintain insurance coverage with respect to third party liability, liability for environmental damage and control of wells, works or drilling activities, extraction of hydrocarbons, the treatment and refining of crude oil and the processing of natural gas. We have also ensured that we maintain insurance coverage in connection with our strategic alliances and other joint arrangements.

Since 2003, we purchase ad hoc business interruption mitigation insurance coverage, which compensates us for the additional expenses necessary to recover our production capabilities in the shortest time possible.

All of our insurance policies are reinsured through Kot Insurance Company, AG (which we refer to as Kot AG). Kot AG is a wholly owned subsidiary company that was originally formed in 1993 under the laws of Bermuda as Kot Insurance Company, Ltd. and was subsequently organized under the laws of Switzerland in 2004. Kot AG is used as a risk management tool to structure and distribute risks across the international reinsurance markets. Kot AG reinsures policies held through our local insurance carriers and maintains control over the cost and quality of the insurance covering our risks. Kot AG reinsures over 84% of its reinsurance policies with unaffiliated third party reinsurers. Kot AG carefully monitors the financial performance of its reinsurers and actively manages counterparty credit risk across its reinsurance portfolio to ensure its own financial stability and creditworthiness. Kot AG maintains solid capitalization and solvency margins consistent with guidelines provided by Swiss insurance authorities and regulations. As of December 31, 2021, Kot AG's net risk retention is circa U.S. $688 million spread across different reinsurance coverages to mitigate potential aggregation factors.

Compliance at Pemex

Our current corporate compliance program *Pemex Cumple* (Pemex Complies) was authorized by the Board of Directors of Petróleos Mexicanos in November 2019. This program amended and supplemented our previous compliance program, which was approved by the Board of Directors of Petróleos Mexicanos on July 14, 2017. See "Item 4 – General Regulatory Framework" for more information regarding Pemex Complies.

As part of this new program, we implemented a compliance hub with different lines of attention: ethics and integrity, anticorruption and due diligence, legal compliance, and data protection and transparency. The program is aimed at strengthening our compliance culture with respect to the applicable legal provisions as well as preventing financial and legal risks, with respect to the national anticorruption strategy, international laws, international treaties, specific regulations for the oil and gas sector, economic competition and internal policies. The General Counsel of Petróleos Mexicanos provides quarterly progress reports to the Board of Directors of Petróleos Mexicanos with respect to the implementation of Pemex Complies.

To strengthen the Pemex Complies program, the Board of Directors approved modifications to the Organic Statute of Petróleos Mexicanos on April 27, 2021, which were published in the Official Gazette of the Federation on May 7, 2021. These modifications

aimed to reinforce some activities and new functions are added to the Legal Department of Petróleos Mexicanos to conform them to those carried out by a compliance officer in accordance with the best international practices such as conducting the implementation of the Pemex Complies program and monitor its compliance and, where appropriate, issue recommendations

These measures are oriented at preventing, reducing and mitigating acts of theft, fraud and corruption, having adequate and effective control and surveillance systems, which constantly and periodically monitor compliance with integrity standards within PEMEX, as well as compliance with the regulatory and legal provisions that are applicable to us.

Ethics Committee

Our Ethics Committee consists of members from our management team and specializes in corporate ethics, which regulates and promotes the implementation and compliance with the Code of Ethics and the Code of Conduct.

Our Ethics Committee is primarily responsible for:

- promoting corporate strategies to create an ethical environment that promotes compliance of our objectives;
- driving knowledge and practice of the Code of Ethics and the Code of Conduct to improve the level of ethical culture of our executive officers and employees;
- establishing procedures that implement the principles found in our Code of Ethics in order to increase compliance and to detect behavior that adversely affects our activities;
- detecting behaviors that may affect the healthy development of PEMEX's activities and implement, when appropriate, strategies that strengthen compliance with the Code of Ethics and Code of Conduct;
- knowing and analyzing possible violations to our Code of Ethics and Code of Conduct that are reported through the ethics tip line;
- knowing, giving an opinion, analyzing and recommending to the appropiate areas on relevant cases of possible violations of the Code of Ethics and the Code of Conduct that are reported through the ethics tip line; and
- acting as a consultation and advisory body on matters related to the implementation of the Code of Ethics and the Code of Conduct.

See "Item 16B—Code of Ethics" for more information regarding our Code of Ethics.

Collaboration and Other Agreements

On April 1, 2018, we subscribed to a memorandum of understanding and collaboration with the SENER, the CNH and Natural Resources Canada in order for Mexico and Canada to share demonstrations of technology and practices for the conservation of hydrocarbons and the measurement and reduction of emissions.

On March 6, 2019, we signed a memorandum of understanding with the Japan Bank for International Cooperation with the purpose of exchanging experiences and promoting development in the energy sector.

On November 15, 2019, we signed a memorandum of understanding with China Export & Credit Insurance Corporation (Sinosure) with the purpose of strengthening our cooperative relationship.

On April 3, 2020, we signed a general coordination agreement for the exchange of services with the *Instituto Mexicano de Seguro Social* (IMSS), *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE) and the *Secretaría de Salud* (Mexican Ministry of Health) with the aim of joining the federal universal healthcare system. The agreement establishes general guidelines and operational, administrative, financing and legal criteria for the provision of universal healthcare and for the exchange or unilateral provision of health care services between our medical providers and those of the other signatories, as well Mexican government health service providers, national health institutes, specialty regional hospitals, federal hospitals and other institutions of the national health system, once we join the universal healthcare program.

Through these agreements and health services, we seek to increase our technical and scientific knowledge in areas that include exploration and drilling. These broad agreements of technological and scientific collaboration are strictly non-commercial, *i.e.*, there is no transfer of resources among the parties.

Property, Plants and Equipment

General

Substantially all of our property, consisting of refineries, storage, production, manufacturing and transportation facilities and certain retail outlets, is located in Mexico, including Mexican waters in the Gulf of Mexico, except for facilities related to Deer Park refinery, which are located in the state of Texas in the United States of America. The location, character, utilization and productive capacity of our exploration, drilling, refining, petrochemical production, transportation and storage facilities are described above. See "—Exploration and Production," "Industrial Transformation,", "—Fertilizers" and "—Logistics". The insurance program covering all of our properties is also described above. See "—Insurance."

Reserves

Under Mexican law, all crude oil and other oil and gas reserves located in the subsoil of Mexico are owned by Mexico and not by us. The Mexican Government has granted us the right to exploit the petroleum and other oil and gas reserves assigned to us in connection with the process that occurred in August 2014 and is commonly referred to as round zero, as well as the right to explore for and exploit petroleum and other oil and gas reserves in areas that have been granted to us in various subsequent rounds. Productive state-owned companies and other companies participating in the Mexican oil and gas industry may report assignments or contracts and the corresponding expected benefits for accounting and financial purposes. See "Information on the Company—History and Development—Legal Regime" above in this Item 4. Our estimates of hydrocarbons reserves are described under "—Exploration and Production—Reserves" above.

GENERAL REGULATORY FRAMEWORK

Petróleos Mexicanos is regulated by the Mexican Constitution, the Petróleos Mexicanos Law and the Hydrocarbons Law, among other regulations. The purpose of the Petróleos Mexicanos Law is to regulate the organization, management, operation, monitoring, evaluation and accountability of Petróleos Mexicanos as a productive-state owned company of the Mexican Government. On October 31, 2014, the Regulations to the Petróleos Mexicanos Law were published in the Official Gazette of the Federation. These regulations were modified on February 9, 2015. The purpose of these regulations is to regulate, among other things, the appointment and removal of the members of the Board of Directors of Petróleos Mexicanos, potential conflicts of interest for Board members, and the evaluation of Petróleos Mexicanos.

The Mexican Government and its ministries regulate our operations in the oil and gas sector. The SENER monitors our operations, and the Secretary of Energy acts as the chairperson of the Board of Directors of Petróleos Mexicanos. In addition, the *Ley de los Órganos Reguladores Coordinados en Materia Energética* (Coordinated Energy Regulatory Bodies related to the Energy Matters Law), which took effect on August 12, 2014, establishes mechanisms for the coordination of these entities with the SENER and other ministries of the Mexican Government. The CNH has the authority to award and execute contracts for exploration and production in connection with competitive bidding rounds. The CRE has the authority to grant permits for the storage, transportation and distribution of oil, gas, petroleum products and petrochemicals in Mexico, and to regulate the first-hand sale of these products. The regulatory powers of the CNH and the CRE extend to all oil and gas companies operating in Mexico, including Petróleos Mexicanos and our subsidiary entities.

On December 2, 2014, the SENER published in the Official Gazette of the Federation a statement declaring that the new Board of Directors of Petróleos Mexicanos was performing its duties and the mechanisms for our oversight, transparency and accountability had been implemented in accordance with the Petróleos Mexicanos Law. As a result, the special regime that governs Petróleos Mexicanos' activities relating to productive state-owned subsidiaries, affiliates, compensation, assets, administrative liabilities, budget, debt levels and the state dividend took effect. On June 10, 2015 the General Provisions for Contracting with Petróleos Mexicanos and its Productive State-Owned Subsidiaries were published in the Official Gazette of the Federation, and on June 11, 2015, the special regime for acquisitions, leases, services and public became effective. On October 8, 2021, new General Provisions for Contracting with Petróleos Mexicanos and its Productive State-Owned Subsidiaries were published in the Official Gazette of the Federation, repealing the previous general provisions published in June 2015 and their subsequent amendments. These General Provisions regulate the legal process for acquisitions, leases, works and services needed for our projects and require that our suppliers, contractors and other participants with whom we have or intend to have a commercial relationship to have compliance programs, and if they do not have one, they may adhere to our Code of Ethics and our Code of Conduct, which are part of PEMEX's compliance program, with the signed commitment to implement their own compliance program, as well as having programs or systems for prevention and compliance with the legal provisions and applicable to the development of its operations, activities or services. In addition, a due diligence process is applied to any third party with whom we intend to enter into and/or continue with a commercial agreement prior to the execution of the agreement.

In accordance with the Petróleos Mexicanos Law, each year the Ministry of Finance and Public Credit provides us with estimated macroeconomic indicators for the following fiscal year, which we are to use to prepare the consolidated annual budget for Petróleos Mexicanos and the subsidiary entities, including our financing program. Upon approval by the Board of Directors of Petróleos Mexicanos, our consolidated budget and financing program is then submitted to the Ministry of Finance and Public Credit, which has the authority to adjust our financial balance goal and the ceiling on our wage and salary expenditures for the fiscal year. The consolidated annual budget and financing program of Petróleos Mexicanos and the subsidiary entities, including any adjustments made by the Ministry of Finance and Public Credit, is then incorporated into the federal budget for approval by the Chamber of Deputies. The Mexican Government is not, however, liable for the financial obligations that we incur. In approving the federal budget, the Chamber of Deputies authorizes our financial balance goal and the ceiling on our wage and salary expenditures for the fiscal year, which it may subsequently adjust at any time by modifying the applicable law.

We are also subject to various domestic and international laws and regulations related to anti-corruption, anti-bribery and anti-money laundering, such as the *Código Penal Federal* (Federal Criminal Code), which criminalizes certain corrupt practices, including bribery, embezzlement and abuse of authority; the *Ley General del Sistema Nacional Anticorrupción* (General Law of the National Anti-Corruption System); the *Ley* de *Fiscalización* y *Rendición de Cuentas de la Federación* (Federal Audit and Accountability Law) and the Ley General de Responsabilidades Administrativas (General Law of Administrative Liabilities), among others. These laws establish a national anti-corruption system designed to coordinate efforts among the Mexican Government, federal entities, states and municipalities to prevent, investigate and punish corrupt activities and oversee public resources, as well as determine administrative liabilities of public officials and the applicable penalties.

We also employ internal control procedures and guidelines designed to monitor the activities of our employees, including senior management, and to ensure compliance with applicable anti-corruption, anti-bribery and anti-money laundering laws and regulations. The *Lineamientos que regulan el sistema de control interno en Petróleos Mexicanos, sus empresas productivas subsidiarias y empresas filiales* (Guidelines governing the internal control system of Petróleos Mexicanos, its productive subsidiary entities and affiliates) set forth the principles underlying our internal controls system and the procedures necessary for its implementation and monitoring. In addition, the *Lineamientos para regular a los Testigos Sociales en Petróleos Mexicanos y sus empresas productivas subsidiarias* (Guidelines to regulate public witnesses in Petróleos Mexicanos and its productive subsidiary entities), delineates the ways in which public witnesses may act as third-party observers in connection with our procurement procedures. These internal controls and guidelines are applicable to Petróleos Mexicanos and the subsidiary entities. For a description of the risks relating to anti-corruption, anti-bribery and anti-money laundering laws and regulations, see "Item 3—Key Information—Risk Factors—Risk Factors Related to our Operations—We are subject to Mexican and international anti-corruption, anti-bribery and anti-money laundering laws. Our failure to comply with these laws could result in penalties, which could harm our reputation, prevent us from obtaining governmental authorizations needed to carry out our operations and have an adverse effect on our business, results of operations and financial condition."

On July 14, 2017, the Board of Directors of Petróleos Mexicanos authorized our Compliance Program, to have policies and procedures to encourage compliance with applicable legal, accounting and financial provisions, prevent risks of corruption, promote values and ethical principles. These policies and procedures are focused on internal control, risk management, ethics and corporate integrity, transparency, accountability and data protection, anti-corruption and due diligence and compliance.

This compliance program was superseded by our current corporate compliance program, Pemex Complies, which was authorized by the Board of Directors of Petróleos Mexicanos in November 2019. As part of this program, we implemented a compliance hub with different lines of attention: ethics and integrity, anticorruption and due diligence, legal compliance, and data protection and transparency.

The program is aimed at strengthening our compliance culture as well as preventing financial and legal risks. with respect to national anticorruption strategy and national and international laws, international treaties, specific regulations for the oil and gas sector, economic competition and internal policies.

On November 11, 2019, the *Código de Conducta de Petróleos Mexicanos, sus empresas productivas subsidiarias y, en su caso, empresas filiales* (Code of Conduct of Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies, or the Code of Conduct), was published in the Official Gazette of the Federation, replacing the code of conduct issued on August 28, 2017. This Code of Conduct delineates behaviors expected of and banned for our executives officers and employees, in accordance with the values established in our Code of Ethics, and includes data protection and transparency related matters. See "Item 16B—Code of Ethics" for more information regarding our code of ethics.

Our *Código de Ética para Petróleos Mexicanos, sus empresas productivas subsidiarias y empresas filiales* (Code of Ethics for Petróleos Mexicanos, its productive subsidiary entities and affiliates, or the Code of Ethics) was approved by the Board of the Directors of Petróleos Mexicanos on November 26, 2019 and published in the Official Gazette of the Federation on December 24,

2019. Our Code of Ethics includes the following principles and values: respect, non-discrimination, honesty, loyalty, responsibility, legality, impartiality and integrity. See "Item 16B—Code of Ethics" for more information regarding our Code of Ethics.

On September 11, 2017, the *Políticas y Lineamientos Anticorrupción para Petróleos Mexicanos, sus empresas productivas subsidiarias y, en su caso, Empresas Filiales* (Anti-corruption Policies and Guidelines for Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies) and the *Políticas y Lineamientos para el desarrollo de la Debida Diligencia en Petróleos Mexicanos, sus empresas productivas subsidiarias y, en su caso, Empresas Filiales, en Materia de Ética e Integridad Corporativa* (Policies and Guidelines to carry out Due Diligence in Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies, in Ethics and Corporate Integrity Matters) became effective. The anti-corruption and due diligence policies were updated and published in the Official Gazette of the Federation on July 21, 2021. The purpose of these regulations is to set up actions to prevent acts of corruption, as well as provide means for executives' officers and employees to identify, manage, and mitigate corruption risks that may affect the attainment of our objectives or our involvement in illicit acts of any kind.

On June 15, 2020 and January 1, 2021, the *Políticas y Lineamientos para la Protección de Datos Personales en Petróleos Mexicanos, sus empresas productivas subsidiarias y, en su caso, Empresas Filiales* (Data Privacy Protection Policies and Guidelines for Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies) and the *Políticas y Lineamientos para el Cumplimiento de Obligaciones de Transparencia y Acceso a la Información Pública en Petróleos Mexicanos, sus empresas productivas subsidiarias y, en su caso, Empresas Filiales* (Policies and Guidelines to comply Transparency and Public Access Information duties in Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies) became effective, respectively. These regulations aim to create a framework for data privacy protection and promote transparency and public access in respect of our operations.

As an issuer of debt securities that are registered under the Securities Act and in connection with certain representations and covenants included in our financing agreements, we must comply with the U.S. Foreign Corrupt Practices Act, or the FCPA. The FCPA generally prohibits companies and anyone acting on their behalf from offering or making improper payments or providing benefits to government officials for the purpose of obtaining or keeping business. In addition, we are subject to other international laws and regulations related to anti-corruption, anti-bribery and anti-money laundering, including the U.K. Bribery Act 2010, which prohibits the solicitation of, the agreement to receive and the acceptance of bribes.

ENVIRONMENTAL REGULATION

Legal Framework

We are subject to environmental laws and regulations associated with atmospheric emissions, water usage and wastewater discharge, as well as waste management and care for affected sites. In particular, we are subject to the provisions of the *Ley General del Equilibrio Ecológico y la Protección al Ambiente* (General Law on Ecological Equilibrium and Environmental Protection, which we refer to as the Environmental Law) and related regulations, the *Ley General para la Prevención y Gestión Integral de los Residuos* (General Law on Waste Prevention and Integral Management), the *Ley General de Cambio Climático* (General Law on Climate Change) and other environmental standards issued by the *Secretaría del Medio Ambiente y Recursos Naturales* (Ministry of the Environment and Natural Resources, or SEMARNAT), the *Comisión Nacional del Agua* (National Water Commission, or CONAGUA), the SEMAR, the CNH and the ASEA.

In April 1997, the SEMARNAT issued regulations governing the procedures for obtaining an environmental license, under which new industrial facilities can comply with all applicable environmental requirements through a single administrative procedure. Each environmental license integrates all of the different permits, licenses and authorizations related to environmental matters for a particular facility. Since these regulations went into effect, we have been required to obtain an environmental license for any new facility.

Before we carry out any activity that may have an adverse impact on the environment, we are required to obtain certain authorizations from the ASEA, the SEMARNAT, the SEMAR, the SENER and the CONAGUA, as applicable. In particular, specific environmental regulations apply to petrochemicals, crude oil refining and extraction activities, as well as to the construction of crude oil and natural gas pipelines. Before authorizing a new project, the ASEA requires the submission of an environmental impact and risk analysis.

ASEA is an administrative body of the SEMARNAT that operates with technical and administrative autonomy and has the authority to regulate and supervise companies participating in the hydrocarbon sector through its issuance of rules establishing safety standards and guidelines for the dismantling and abandonment of facilities, among other things. The *Ley de la Agencia Nacional de Seguridad Industrial y de Protección al Medio Ambiente del Sector Hidrocarburos* (Law of the Hydrocarbons Industrial Safety and

Environmental Protection Agency of the Hydrocarbon Sector) provides that until the general administrative provisions and Official Mexican Standards proposed by the ASEA are in effect, obligations will continue under the guidelines, technical and administrative arrangements, agreements and Official Mexican Standards promulgated by the SEMARNAT, the CNH and the CRE.

We are also subject to the NOM-001-SEMARNAT-1996 issued by SEMARNAT, which sets forth the maximum permissible levels of pollutants in wastewater that can be discharged into national bodies of water, the NOM-052-SEMARNAT-2006, which regulate hazardous waste, as well as the NOM-138-SEMARNAT/SSA1-2012, which establishes the maximum permissible levels of hydrocarbons in the soil and sets forth guidelines with respect to soil testing and the treatment of sites affected by hydrocarbon production, among other forms of contamination.

Federal and state authorities are authorized to inspect any facility to determine its compliance with the Environmental Law, state environmental laws, regulations and technical environmental regulations. Violations or non-compliance with environmental standards and regulations may result in substantial fines, temporary or permanent shutdown of a facility, required capital expenditures to minimize the effect of our operations on the environment, cleanup of contaminated soil and water, cancellation of a concession or revocation of an authorization to carry out certain activities and, in certain cases, criminal proceedings. See "Item 3—Key Information—Risk Factors—Risk Factors Related to Our Operations—Our compliance with environmental regulations in Mexico could result in material adverse effects on our results of operations."

Mexico participates in multilateral negotiations on climate change to promote a sustainable and low-carbon economy. In September 2016, the Mexican Government ratified the Paris Agreement and endorsed its Nationally Determined Contribution (NDC) by unconditionally committing Mexico to the reduction of 22.0% of its greenhouse gas emissions and 51.0% of its black carbon emissions (a short-lived climate pollutant) by 2030. This commitment adopts 2013 metrics as a baseline. This commitment may also be increased by an additional reduction of up to 36.0% of Mexico's greenhouse gas emissions and 70.0% of its black carbon emissions, on a conditional basis and subject to the adoption of a global market agreement, which would promote international carbon pricing, as well as financial and technical cooperation.

Mexico's NDC commitment envisions the participation of all social and economic segments of the country, especially the energy and industrial sectors. As a result, in July 2018, the second transitory article of the General Law on Climate Change was amended to include the commitments made by the government. Pursuant to the General Law on Climate Change, greenhouse gas emissions from the oil and gas sector are required to decrease by 14.0% by the year 2030, as compared to the sector's baseline.

Additionally, Article 94 of the General Law on Climate Change was supplemented to indicate that the SEMARNAT must gradually and progressively establish a national emissions trading system, designed to promote the reduction of emissions at the lowest possible cost. Pursuant to this law, the reduction of emissions must be measurable, reportable and verifiable. In order to ease the transition for system participants, the *Programa de Prueba del Sistema de Comercio de Emisiones* (Pilot Program for the Emissions Trading System) will operate from 2020 to 2022. To facilitate the transition, during the years 2020 to 2022, the Pilog Program for the Emissions Trading System will be in operation, a phase during which we have actively participated and we are evaluating initiatives to reduce our emissions, taking into consideration the additional cost that such initiatives will have once emissions caps are defined for each participant.

Mexico generally reviews and updates its environmental regulatory framework every five years, and we work with the Mexican Government to develop new environmental regulations of activities related to the hydrocarbon industry.

Climate Change

We are working to develop projects and initiatives related to our emissions goals for our main productive activities. In 2021, our operations generated 70.5 million tons of carbon dioxide equivalent, which represented a 7.1% increase, as compared to our total carbon dioxide equivalent emissions in 2020. The increase was primarily due to a growth in our exploration, production and refining activities, compressors breakdowns at gas processing complexes and a limited associated gas recovery in extraction activities. The values reported for 2020 were updated based on an adjustment in volume and molar composition of the gas sent to flaring, reporting a total of 65.8 million tons of carbon dioxide equivalent for 2020.

In 2021, considering the relevance of climate change and our commitment to this issue, the following actions and investments were made in this area, having an impact on emissions mitigation and on our resilience and capacity to adapt:

- The refurbishment of natural gas sweetening and alkylation plants, as well as sulfur recovery units at Pemex Industria Transformation.
- The acquisition, repair and overhaul of compressors to increase Pemex Exploration and Production's gas handling and utilization.

- The improvement of operational flexibility through the interconnection of projects associated with the gas transportation system.
- The update of the methodologies used to calculate the carbon footprint of our activites, in collaboration with the environmental authorites, and the expansion of the activities included in our greenhouse gases inventory.
- The rehabilitation of compressors at the Gas Processing Centers, which will, in time, increase the use of natural gas for productive purposes.
- The compliance with the *Programas de Prevención y Control de Emisiones de Metano* (Methane Emission Prevention and Control Programs) in our facilities.
- The verification of greenhouse gas emission levels at sites that recorded emissions of more than one million tons of carbon dioxide equivalent per year.
- The selection of representatives, training of personnel, development of Monitoring Plans and surrender of emission allowances corresponding to the first year of operations of the Pilot Program for the Emissions Trading System, at our participating facilities.
- The preparation of climate risk analyses for strategic facilities, such as the Dos Bocas Maritime Terminal, the Madero Refinery and the Salina Cruz Storage and Port Services Terminal, aiming at preventing and reducing the damages and losses that might be caused by the impact of extreme meteorological and climatic phenomena, and strengthening their operational continuity and the physical security of their facilities, personnel and environment.
- The preparation of training and awareness workshops for our personnel on the risks associated with extreme weather and climate events, their potential impact on our infrastructure and the strategies that could help to reduce it, with the collaboration of *Centro Nacional de Prevención de Desastres* (The National Center for Disaster Prevention), the World Resources Institute Mexico and *el Centro Mario Molina para Estudios Estratégicos sobre Energía y Medio Ambiente* (the Mario Molina Center for Strategic Studies on Energy and Environment).

Biodiversity

During 2021, we continued operating the Jaguaroundi Ecological Park, located in Coatzacoalcos, Veracruz. This park is certified as an *Área Destinada Voluntariamente a la Conservación* (Voluntary Area for Conversation). This park is the first Voluntary Area for Conservation and has an extension of 960 hectares of rain forest, natural grassland, tropical oak and 57 hectares of water bodies that are registered with the *Comisión Nacional de Áreas Naturales Protegidas* (National Commission for Protected Natural Areas). The park is open to the public and environmental education activities are carried out for nearby communities, schools and industries. In 2021, we organized virtual workshops, talks and tours through the park's social networks.

We also maintain the Tuzandépetl Ecological Park, located in the Municipality of Ixhuatlán del Sureste, Veracruz. With an area of 1,104 hectares, the Tuzandépetl Ecological Park is also certified as a Voluntary Area for Conservation. Interesting and rich extensions of mangrove, popal and tular are found here. This wetland of about 600 hectares is important for its role as a flood regulator in the area and as a receiver of migratory birds in the winter. The property also has important groves of corozo palms, yucatecan palms and evergreen rainforest. Troops of howler monkeys and spider monkeys live in the park, which are the only two Mexican primates considered as fauna in protected status under the NOM-059-SEMARNAT-2018. The conservation value of Tuzandépetl Ecological Park lies in the fact that is located in one of the states with the greatest change in land use that preserves only 3.0% of its native vegetation. By keeping these wet land and rain forest remnants in a good state of conservation, it allows the community and Pemex to enjoy the environmental services that nature provides, such as a favorable habitat for pollinators or the capture of water and carbon dioxide.

HEALTH, SAFETY AND ENVIRONMENTAL PERFORMANCE

We believe that we are in substantial compliance with current federal and state environmental laws and that we maintain an organizational structure designed to identify and solve environmental risks. In addition, our subsidiary entities have specialized departments that implement their own internal environmental programs, audits and facilities inspections. When these internal audits reveal problems or deficiencies, the subsidiary entities take the necessary measures to eliminate them.

Since 1993, we have participated in the National Environmental Audit Program (NEAP), a voluntary alternative to the traditional system of inspections and penalties. This program was created by *Procuraduría Federal de Protección al Ambiente* (PROFEPA) in 1992 as a regulatory incentive for companies to voluntarily correct any environmental irregularities in their operations and is now carried out instead by ASEA for the hydrocarbons sector.

In general terms, voluntary environmental auditing consists of three stages: (i) an audit and compliance diagnosis; (ii) the development of an action plan to correct irregularities; and (iii) the implementation of the action plan. If a company satisfactorily completes these three stages, ASEA or PROFEPA grants the audited company a clean industry certificate or an environmental quality certificate, indicating our compliance with the applicable environmental legislation for its industry.

As of December 31, 2021, we have registered 17 of our facilities with NEAP with the objective of obtaining a "clean industry" certificate for each facility. During 2021, five of our facilities were re-certified and three of our facilities were certified for the first time. Nine more facilities are currently in the process of obtaining certification.

As part of our accident prevention strategy, we conduct root cause investigations of all incidents that occur during our operations. These investigations are carried out by multidisciplinary groups to identify the causes, establish corrective measures and follow up until 100% implementation, both in the workplace where the accident occurred and in similar facilities.

During 2021, we experience the following 6 hazardous events at our facilities:

- On April 27, 2021, while performing cutting work on the screws of a head in Well Samaria 810-D, at the time of cutting the screw lock, a flame occurred in the head and a worker from the company "Probadores Petroleros" lost his life.
- On May 26, 2021, while in the northern area of the RB-02 biological reactor, two workers from the company "Servicios y Construcciones de la Laguna" suffered an electric shock caused by an electric arc, one of them lost his life and another was injured.
- On July 19, 2021, when carrying out an excavation at Manzanillo pipeline to TAD Tapeixtles, during the placement and reinforcement of the casing (wooden boards and beams) to reinforce the slope in the excavation, there was a collapse of the slope due to softening of the ground, trapping a worker from the company "La Mar Constructora Inmobiliaria", lost his life.
- On August 3, 2021, during construction work on an underwater pipeline, a diver from the company "Arendal" lost his life when he was trapped in the MAF flange mouth while removing the cover.
- On August 22, 2021, during cleaning work on the turbo compressor discharge lines, a leak with fire occurred at the Eku-A2 Platform, 7 workers lost their lives (1 from Pemex, 2 from "BMCI" company and 4 of "Cotemar" company), additionally 6 workers were injured (4 from Pemex and 2 from "Cotemar" company).
- On November 25, 2021, during the pulling maneuvers for the replacement of the 8" Ø circuit of the general test head towards the entrance of the SD-FA 1110 separator, a worker from the "Promotora Petrolera Regiomontana" Company falls into the sea from the first level of the Yaxche-A platform, losing his life.

In 2021, our lost time injury frequency rate increased 45.8%, going from 0.24 to 0.35 accidents per million man-hours worked with exposure to risk, both in 2020 and 2021. Pemex Industrial Transformation had the highest lost time injury rates during the year. Our lost days indicator due to injuries increased 53.8%, from 13 to 20 lost days per million man-hours worked with risk exposure from 2020 to 2021. Lost days are those missed as a result of incapacitating injuries suffered at work or those for which compensation is paid for death. For 2020 and 2021, our contractors' lost time injury rate remained the same, with 0.16 injuries per million man-hours worked with risk exposure.

In 2021, our primary initiatives in industrial safety, health and environmental protection (EH&S) included the following:

- Monitored our *Programa de Atención a los Riesgos Críticos A1 (A1 Critical Risk Attention Program)*. During 2021, 190 critical risks have been validated, of which 10.2% from Subsidiary Entities risks and 32.3% from the National Refining

System risks have been addressed. Regarding the year 2020, 240 critical risks have been validated, of which 77.2% from the Subsidiary Entities and 60.8% from the National Refining System have been addressed.

- Issuance of technical and regulatory reports on Industrial Safety to ensure proper risk management, for a safe and reliable operation in accordance with the strategy of the General Management of Petróleos Mexicanos.
- The Safe Execution and Supervision Plan with ZERO TOLERANCE came into operation, in which short-term lines of action are established to ensure the operational continuity of the business lines, with special emphasis on ZERO TOLERANCE for deviations and non-compliance of standards and protocols.
- Evaluation of Compliance with NOM 020 of Ministry of Labor and Social Welfare), for pressure vessels with visits to three work centers (19 teams ruled).
- Implementation of the Program to Strengthen Critical Safety Standards in Pemex Corporate and Pemex Industrial Transformation; likewise, a Risk Management Leadership Program is executed for Pemex Exploration and Production.
- Coordination of the 2021 Audit Program to strengthen Occupational Health and Safety at the facilities.
- Conduction of the Root Cause Analysis of relevant events of the Subsidiary Productive Companies and the Direction of Corporate Administration and Services.
- Monitoring and evaluation for the attention of recommendations derived from: risk rating agencies, insurance companies and government agencies (Ministry of Labor and ASEA).
- Supervision and evaluation of the temporary mitigation plans for type "A" critical risks that affect the mechanical integrity of the facilities and Work Centers of the Subsidiary Productive Companies, validated by the Pemex Risk Committee.
- Audit Program for the performance of EH&S in facilities with deviations during 2021, in process safety and personal safety.
- Development and qualification of three courses of the PEMEX-SSPA System (*Sistema de Administración de Seguridad, Salud y Protección Ambiental*) for their delivery on-line for the entire company: Effective Audits, Operative Discipline and nine Critical Procedures.
- Supervision, evaluation and control over compliance with the Guidelines, results of self-assessments on the sanitary health protocols of our Strategy, to prevent COVID-19 spread.

In order to reverse the trend of accident rates, during the year 2022 the execution of these initiatives will continue and a reinforcement program will be carried out on safety elements: Order and Cleaning, Prevention and Falls, Personal Protection Equipment and Loading or Handling of Objects.

Environmental Liabilities

As of December 31, 2021, our estimated and accrued environmental liabilities totaled Ps. 11,138.9 million. Of this total, Ps. 3,606.1 million pertained to Pemex Exploration and Production, Ps. 4,234.5 million to Pemex Industrial Transformation and Ps. 3,298.2 million to Pemex Logistics.

The following tables detail our environmental liabilities by productive subsidiary entity and operating region at December 31, 2021.

Pemex Exploration and Production	Estimated Affected Area (in hectares)	Estimated Liability (in millions of pesos)
Northern region	482.1	Ps. 1,820.2
Southern region	408.2	1,628.5
Total	890.3	**Ps. 3,448.7**

Note: Numbers may not total due to rounding.
Source: Pemex Exploration and Production.

	Holding Ponds Drainage	
	Number of Holding Ponds Reported as Liabilities	Estimated Liability
		(in millions of pesos)
Southern region	8	Ps. 77.7
Northern region	32	79.7
Total	40	Ps. 157.4
Total estimated environmental liabilities of Pemex Exploration and Production		**Ps. 3,606.1**

Note: Numbers may not total due to rounding.
Source: Pemex Exploration and Production.

Pemex Industrial Transformation	Estimated Affected Area	Estimated Liability
	(in hectares)	(in millions of pesos)
Refineries	235.5[1]	Ps. 4,100.3
Complex gas processors	6.0	134.2
Total estimated environmental liabilities of Pemex Industrial Transformation	241.5	**Ps. 4,234.5**

Note: Numbers may not total due to rounding

(1) The affected area shows a decrease of 50 hectares corresponding to the Santa Alejandrina reservoir, in relation to the same period of 2020. Since there is no procedure before the National Agency for Industrial Safety and Environmental Protection of the Hydrocarbons Sector of remediation in the modality of environmental liability in the swamp and because there are sampling results within parameters showing that the area is not affected.

Source: Pemex Industrial Transformation.

Pemex Logistics	Estimated Affected Area	Estimated Liability
	(in hectares)	(in millions of pesos)
Storage and Distribution Terminals	61.0	Ps. 1,205.0
Pipelines	60.7	1,354.4
Treatment and Logistics	132.3	738.8
Total estimated environmental liabilities of Pemex Logistics	254.0	**Ps. 3,298.2**

Note: Numbers may not total due to rounding.
Source: Pemex Logistics.

Our estimates of environmental liabilities include cost estimates based on the characteristics of the claim and the corresponding remediation. Our environmental liabilities also include the elimination of holding ponds created by abandoned petroleum wells. We accrue environmental liabilities, in accordance with IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" for IFRS purposes. Estimated liabilities include assumptions resulting from an initial evaluation of damage, including land acreage to be remediated, depth and type of contamination. There is a possibility that the actual scope of remediation could vary depending upon information gathered during the initial evaluation and the remediation process. For a further discussion of our environmental liabilities, see Note 3-J and Note 20 to our consolidated financial statements included herein.

Unasserted or additional claims are not reflected in our identified liabilities. As of December 31, 2021, we were not aware of uncertainties with respect to joint and several liabilities that could affect our assessment of environmental contingencies or otherwise result in a major environmental liability. As a result, we believe we are positioned to know immediately of any claims and are therefore directly accountable for any claims that may be brought against us.

Pemex Exploration and Production remains responsible for handling existing environmental liabilities—these responsibilities are not part of the Integrated E&P Contracts. Nevertheless, the Integrated E&P Contracts include environmental clauses related to the contractors' and Pemex Exploration and Production's responsibility to ensure an adequate environmental performance, and also establish the terms for compensation and repair of any new environmental impacts.

The initial evaluation and remediation of environmental liability sites are dependent upon the annual budget approved by the Mexican Congress.

On August 1, 2017, we were granted a favorable judgment by the Supreme Court of Justice of the Nation, which determined that we are not liable for material and environmental damages caused by hydrocarbons spills related to illegal tapping of pipelines, since the environmental damage was caused by third party criminal behavior.

Environmental Projects and Expenditures

In 2021, we spent Ps. 1,057.4 million on environmental projects and related expenditures, as compared to Ps. 468.7 million in 2020. For 2022, we have budgeted Ps. 2,348.1 million for environmental projects and expenditures, including modernizing of installations, implementing systems and mechanisms to monitor and control atmospheric pollution, acquiring equipment to address contingencies related to oil and gas spills, expanding water effluent systems, restorating, and reforesting affected areas, engaging in environmental investigations and environmental audits. In addition, we continue to conduct research and development efforts to increase our capacity to produce gasoline, diesel and fuel oil with lower sulfur content at our refineries in Mexico.

We do not believe that the cost of complying with environmental laws or environmental requirements related to the USMCA among the governments of Mexico, the United States and Canada, the Vienna Convention for the Protection of the Ozone Layer, the Agreement on Environmental Cooperation between the Governments of Mexico and Canada or Mexico's membership in the Organization for Economic Cooperation and Development, has caused or will cause a significant increase in our environmental expenditures.

Social Responsibility

We understand social responsibility as the commitment we have with the communities where we carry out our hydrocarbon production, transformation and logistics activities. In compliance with the laws and regulations, we strive to build good community relationships based on trust, transparency and respect to the forms of coexistence of the communities. Through this and some other actions, we seek to give back to the communities, by generating shared benefits with stakeholders that favor our operational continuity and the generation of value.

During 2021, we implemented and continued various corporate social responsibility initiatives in communities where we carried out substantial activities to our value chain.

Our corporate and social responsibility goals are carried out through the following mechanisms:

- product donations of fuels and asphalt;
- the *Programa de Apoyo a la Comunidad y Medio Ambiente* (Program to Support Communities and the Environment, which we refer to as PACMA), which supports and implements social programs, actions and public works designed to improve the social conditions of the communities in which we operate;
- other instruments that provide a positive impact on communities such as Integrated E&P Contracts, through which we and our contractors commit to improving the quality of life in communities where we operate directly or indirectly; and
- mutually beneficial public works or projects, which we carry out in collaboration with local authorities and communities to improve infrastructure that is beneficial both to us and to the community.

In 2021, the total value of our social responsibility donations and contributions amounted to Ps. 1,496.2 million. Our asphalt and fuel donations amounted to Ps. 1,079.5 million. PACMA contributions amounted to Ps. 400.6 million, contributions made through provisions of our Integrated E&P Contracts amounted to Ps. 7.2 million and mutual benefit project contributions amounted to Ps. 8.9 million.

Approximately 91.1% of our donations and contributions were assigned to eleven states with greater activity in the oil and gas industry (Campeche, Chiapas, Coahuila, Guanajuato, Hidalgo, Nuevo León, Oaxaca, Puebla, Tabasco, Tamaulipas and Veracruz); and the remaining 8.9% to the remaining states.

Notably, we took the following specific actions in 2021:

- contributed Ps. 1,079.5 million in asphalt and fuel donations. Of our 2021 asphalt and fuel donations, 56.9% was concentrated in the states of Campeche, Oaxaca and Veracruz;

- made several social responsibility actions under our PACMA program. Approximately 49.5% of these actions were allocated to Tabasco, approximately 16.2% to Veracruz and approximately 10.6% to Campeche. The remainder, or approximately 23.7%, was allocated to Chiapas, Guanajuato, Hidalgo, Nuevo León, Oaxaca, Puebla and Tamaulipas.
- carried out 6 projects related to Integrated E&P Contracts in the states of Veracruz and Tamaulipas for a total amount of Ps. 7.2 million. We contributed Ps. 3.7 million in Veracruz and Ps. 3.5 million in Tamaulipas. These projects were mainly education, sports, health and environmental protection projects; and
- contributed a total of Ps. 8.9 million via one mutual benefit project, which was directed towards the state of Chiapas. This project wase for infrastructure, such as the paving of roads.

In summary, we contribute Ps. 416.7 million through programs, works and/or actions as follows: Ps. 151.7 million to infrastructure, Ps. 92.7 million to health, Ps. 75.8 million to education and sports, Ps. 36.2 million to environmental protection, Ps. 33.3 million to productive projects, and Ps. 27.0 million to public safety and civil protection.

TRADE REGULATION, EXPORT AGREEMENTS AND PRODUCTION AGREEMENTS

Though Mexico is not a member of OPEC, it has periodically announced increases and decreases in our crude oil exports reflecting production revisions made by other oil producing countries and entered into agreements with OPEC and non-OPEC members to reduce its oil exports, in order to contribute to crude oil prices stabilization.

On April 12, 2020, Mexico entered into an agreement with OPEC and non-OPEC countries to reduce world crude oil production. Pursuant to this agreement, the OPEC+ countries agreed to reduce their overall crude oil production by 9.7 million barrels per day from May 1, 2020 through June 30, 2020, by 7.7 million barrels per day from July 1, 2020 through December 31, 2020 and by 5.8 million barrels per day from January 1, 2021 through April 30, 2022. In particular, Mexico agreed to reduce its, and in turn our, crude oil production by 100,000 barrels per day for a period of two months beginning on May 1, 2020. This agreement was intended to help mitigate the decrease in oil prices and demand that has taken place as a result of the COVID-19 pandemic. Mexico has not agreed to additional production cuts since the April 12, 2020 agreement.

On July 1, 2020, the USMCA entered into force, replacing NAFTA. The USMCA has not affected Mexico's rights, through PEMEX or other companies, to explore and exploit crude oil and natural gas in Mexico, to refine and process crude oil and natural gas and to produce petrochemicals in Mexico. The USMCA continues the zero-tariff rate on the export of petrochemical products from Mexico to the United States that existed under NAFTA. However, any change in trade relations between Mexico, the United States and Canada as a result of the implementation of the USMCA could require us to renegotiate our contracts, limit our ability to explore and exploit crude oil or natural gas in Mexico, increase the tariff rate and/or lose business, resulting in an adverse impact on our business and the results of our operations. See "Item 3—Key Information—Risk Factors—Risk Factors Related to Mexico—Economic and political developments in Mexico and the United States may adversely affect Mexican economic policy and, in turn, PEMEX's operations."

TAXES, DUTIES AND OTHER PAYMENTS TO THE MEXICAN GOVERNMENT

General

Taxes and duties applicable to us are a significant source of revenues to the Mexican Government. We contributed approximately 3.7% of the Mexican Government's revenues in 2020 and 6.6% in 2021. In 2021, we paid a number of special oil and gas taxes and duties, in addition to the other taxes and duties paid by some of the subsidiary companies, as described below under "—Other Taxes." The fiscal regime in effect for Petróleos Mexicanos and the subsidiary entities for 2021 (which we refer to as the fiscal regime) became effective in 2015 and can be subsequently modified from time to time. The implementing legislation published in August 2014 set forth a fiscal regime applicable to the new contractual arrangements that governs exploration and production activities conducted in Mexico beginning on January 1, 2015, as well as a state dividend to be paid by Petróleos Mexicanos and the subsidiary entities beginning on January 1, 2016. See "—Fiscal Regime" and "—Other Payments to the Mexican Government" below.

Fiscal Regime for PEMEX

Fiscal Regime

The Hydrocarbons Revenue Law sets forth, among other things, the following duties applicable to us in connection with our assignments granted by the Mexican Government:

- *Derecho por la Utilidad Compartida* (Profit-Sharing Duty): As of January 1, 2015, this duty was equivalent to 70.0% of the value of oil and gas produced in the relevant area, less certain permitted deductions. Pursuant to the Hydrocarbons Revenue Law, this duty decreases on an annual basis. As of January 1, 2021, the rate of this duty was set at 54%. During 2021, we accrued expenses of Ps. 374,434 million in connection with this duty, a 71.0% increase as compared to the Ps. 218,913 million accrued in 2020, primarily resulting from an increase in oil and gas prices. In addition, the application of the decree published in the Official Gazette of the Federation on February 19, 2021, granted a tax benefit to PEMEX consisting of a tax credit equivalent to Ps. 73,280 million for 2021. The tax benefit was granted to PEMEX to increase investment in hydrocarbon exploration and production activities.
- *Derecho de Extracción de Hidrocarburos* (Hydrocarbons Extraction Duty): This duty is determined based on a rate linked to the type of hydrocarbon (e.g., crude oil, associated natural gas, non-associated natural gas or condensates), the volume of production and the market price of such hydrocarbon. During 2021, we incurred Ps. 81,983 million under this duty, a 117.6% increase as compared to the Ps. 37,674 million in 2020, mainly due to an increase in oil and gas prices.
- *Derecho de Exploración de Hidrocarburos* (Hydrocarbons Exploration Duty): For the year ended December 31, 2021, the Mexican Government is entitled to collect a monthly payment of Ps. 1,442.57 per square kilometer of non-producing areas. After 60 months, this duty increases to Ps. 3,449.63 per square kilometer for each additional month that the area is not producing. These amounts will be updated on an annual basis in accordance with the National Consumer Price Index (NCPI). During 2021, we incurred Ps. 1,443 million under this duty, a 35.0% increase as compared to the Ps. 1,069 million in 2020.
- In 2021, Mexican companies paid a corporate income tax at a rate of 30.0% applied to revenues, less certain deductions. Beginning in 2015, Petróleos Mexicanos and the subsidiary entities became subject to the *Ley del Impuesto sobre la Renta*, or Mexican Income Tax Law. During, 2020 we did not pay any tax under this law and for 2021 we incurred Ps. 1,312 million.

Under the 2021 fiscal regime, some of our products are subject to the following IEPS taxes, which we withhold from our customers and pay to the tax authorities. The IEPS tax is not included in our sales or expenses.

- *IEPS Sobre la Venta de los Combustibles Automotrices* (IEPS Tax on the Sale of Automotive Fuels): This tax is a fee on domestic sales of automotive fuels, gasoline and diesel. Pemex Industrial Transformation collects the tax on behalf of the Mexican Government. The applicable fees for this tax are Ps. 5.11 per liter of Magna gasoline, Ps. 4.32 per liter of Premium gasoline and Ps. 5.62 per liter of diesel. The amount of the fee depends on the class of fuel. It is fixed yearly and adjusted on a weekly basis by the Ministry of Finance and Public Credit. The fees apply to sales in Mexico and imports.
- *IEPS Beneficio de Entidades Federativas, Municipios y Demarcaciones Territoriales* (IEPS Tax in Favor of States, Municipalities and Territories): This tax is a fee on domestic sales of automotive fuels, gasoline and diesel. Pemex Industrial Transformation collects the tax on behalf of the Mexican Government. The applicable fees for this tax are 45.14 cents per liter of gasoline with an octane level less than 55.09 cents per liter of gasoline with an octane level of 91 or greater and 37.47 cents per liter of diesel. This fee changes yearly in accordance with inflation. Funds collected from this tax are allocated to Mexican states and municipalities as provided for in the *Ley de Coordinación Fiscal* (Tax Coordination Law). The fees only apply to sales in Mexico and are not subject to VAT.
- *IEPS a los Combustibles Fósiles* (IEPS Tax on Fossil Fuels): This tax is a fee on domestic sales of fossil fuels. Pemex Industrial Transformation collects the tax on behalf of the Mexican Government. The applicable fees for this tax are 7.73 cents per liter of propane, 10.00 cents per liter of butane, 13.56 cents per liter of gasoline and aviation gasoline, 16.19 cents per liter of jet fuel and other kerosene, 16.45 cents per liter of diesel, 17.56 cents per liter of fuel oil, Ps. 20.38 per ton of petroleum coke, Ps. 47.77 per ton of coal coke, Ps. 35.97 per ton of mineral carbon and Ps. 52.00 per ton of carbon from other fossil fuels. These fees change yearly in accordance with inflation and apply to imports to Mexico.

The Hydrocarbons Revenue Law also establishes the fiscal terms to be applied to exploration and production contracts granted by the Mexican Government to us or to other companies in connection with potential future competitive bidding rounds. Specifically, these fiscal terms contemplate the following taxes, duties, royalties and other payments to the Mexican Government (in addition to any taxes payable pursuant to applicable tax laws):

- *Cuota Contractual para la Fase Exploratoria* (Exploration Phase Contractual Fee): During the exploration phase of a project governed by a license, production-sharing contract or profit-sharing contract, the Mexican Government is entitled to collect a monthly payment of Ps. 1,442.58 per square kilometer for each month that the area is not producing. After 60 months, this fee increases to Ps. 3,449.63 pesos per square kilometer for each additional month that the area is not producing. The fee amount will be updated on an annual basis in accordance with the NCPI.
- *Regalías* (Royalties): Royalty payments to the Mexican Government are determined based on the "contractual value" of the relevant hydrocarbons. The contractual value is determined based on a variety of factors, including the types of underlying hydrocarbons (e.g., crude oil, associated natural gas, non-associated natural gas or condensates), the volume of production and the market price. Royalties are payable in connection with licenses, production-sharing contracts and profit-sharing contracts.
- *Pago del Valor Contractual* (Contractual Value Payment): Licenses require a payment calculated as a percentage of the "contractual value" of the hydrocarbons produced, as determined by the Ministry of Finance and Public Credit on a contract-by-contract basis.
- *Porcentaje a la Utilidad Operativa* (Operating Profit Payment): Production-sharing contracts and profit-sharing contracts require a payment equivalent to a specified percentage of operating profits. In the case of production-sharing contracts, this payment is to be made in-kind through delivery of the hydrocarbons produced. In the case of profit-sharing contracts, this payment is to be made in cash.
- *Bono a la Firma* (Signing Bonus): Upon execution of a license or migration of an assignment, a signing bonus is to be paid to the Mexican Government in an amount specified by the Ministry of Finance and Public Credit.
- *Impuesto por la actividad de Exploración y Extracción de Hidrocarburos* (Hydrocarbons Exploration and Extraction Activities Tax): Exploration and extraction contracts and assignments granted by the Mexican Government will include a specified tax on the exploration and extraction activities carried out in the relevant area. A monthly tax of Ps. 1,881.60 per square kilometer is payable during the exploration phase until the extraction phase begins. During the extraction phase of a project, a monthly tax of Ps. 7,526.47 per square kilometer is payable until the relevant exploration and extraction contracts or assignment is terminated. During 2021 and 2020 the incurred tax amounted to Ps. 211 million and Ps. 204 million, respectively.

Under the Hydrocarbons Revenue Law, exploration and production activities associated with contracts exploration and production contracts are not subject to VAT.

Fluctuating crude oil price levels directly affect the level of certain taxes and duties that we pay. See "Item 3—Key Information—Risk Factors—Risk Factors Related to our Relationship with the Mexican Government—We pay significant taxes and duties to the Mexican Government, and, if certain conditions are met, to pay a state dividend, which may limit our capacity to expand our investment program or adversely impact our financial condition generally."

Other Payments to the Mexican Government

Pursuant to the Petróleos Mexicanos Law, as of January 1, 2016, Petróleos Mexicanos and the subsidiary entities are required to pay a state dividend to the Mexican Government on an annual basis. In July of each year, Petróleos Mexicanos and the subsidiary entities are required to provide the Ministry of Finance and Public Credit a report disclosing their financial results for the previous fiscal year and their investment and financing plans for the following five years, together with an analysis of the profitability of these investments and the relevant projections of their financial positions. The Ministry of Finance and Public Credit will rely on this report and a favorable opinion issued by a technical committee of the Mexican Petroleum Fund for Stabilization and Development to determine the amount of the state dividend to be paid by Petróleos Mexicanos and each of the subsidiary entities. The Petróleos Mexicanos Law provides that the aggregate amount of the state dividend to be paid in 2016 was to be equal to, at minimum, 30.0% of the total revenues of Petróleos Mexicanos and the subsidiary entities, after taxes, from the previous fiscal year. It further provides that this percentage will decrease in subsequent years, until reaching 15% in 2021 and 0% in 2026. In accordance with the Federal Revenue Law for 2019, 2020 and 2021, Petróleos Mexicanos was not required to pay a state dividend in 2019, 2020 and 2021 and will not be required to pay a state dividend in 2022.

The following table sets forth the taxes and duties that we recorded for each of the past three years.

	Year ended December 31,		
	2021	2020	2019
	(in millions of pesos)[1]		
Hydrocarbon extraction duties	Ps. 306,827	Ps. 154,609	Ps. 372,813
Income tax (benefit) expense	521	30,963	(28,989)
Total	**Ps. 307,348**	**Ps. 185,572**	**Ps. 343,824**

Note: For a description of these taxes and duties, see "Item 4—Information on the Company—Taxes, Duties and Other Payments to the Mexican Government."

Numbers may not total due to rounding.

(1) Figures are stated in nominal pesos.

Source: PEMEX's audited consolidated financial statements, prepared in accordance with IFRS.

Other Taxes

Since 1994, our interest payments on our external debt have been subject to Mexican Government withholding taxes. Nevertheless, withholding taxes do not represent a substantial portion of our total tax liability.

We are subject to municipal and state taxes, such as real property and payroll taxes. However, because most of our facilities are located on federal property, which is not subject to municipal taxation, real property taxes are not a significant part of our overall taxes. Similarly, payroll taxes do not represent a substantial portion of our total tax liability.

In addition, we have a number of non-Mexican subsidiary companies that may be subject to taxation in the jurisdiction of their incorporation or operations. The aggregate taxes paid by the subsidiary companies were Ps. 3,090.2 million in 2019, Ps. 2,298.8 million in 2020 and Ps. 2,725.3 million in 2021.

No assurance can be given that our tax regime will not change in the future. See "Item 3—Key Information—Risk Factors—Risk Factors Related to our Relationship with the Mexican Government—We pay significant taxes and duties to the Mexican Government, and, if certain conditions are met, to pay a state dividend, which may limit our capacity to expand our investment program or negatively impact our financial condition generally."

Item 4A. Unresolved Staff Comments

Not applicable.

Item 5. Operating and Financial Review and Prospects

General

We earn income from**:**

- export sales, which consist of sales of crude oil and condensates, petroleum products and petrochemical products;
- domestic sales, which consist of sales of natural gas, petroleum products (such as gasoline, diesel fuel and LPG) and petrochemical products; and
- other sources, including financial and investment income and insurance revenue.

Our operating expenses include:

- cost of sales, including the cost of purchases of imported petroleum and other products, depreciation and amortization, salaries, wages and benefits, a portion of the net cost of employee benefits for the period, the variation of inventories, maintenance, and exploration and unsuccessful drilling expenses;
- transportation and distribution expenses (including a portion of the net cost of employee benefits for the period); and
- administrative expenses (including a portion of the net cost of employee benefits for the period).

Our income is affected by a number of factors, including:

- changes in international prices of crude oil, petroleum products and petrochemical products, which are denominated in U.S. dollars, and domestic prices of petroleum products, which are denominated in pesos;
- the type and volume of crude oil produced and exported;
- the type and volume of natural gas produced, processed and sold domestically and internationally;
- the results of development and exploration activities;
- the amount of taxes, duties and other payments that we are required to make to the Mexican Government;
- fluctuations in the peso-U.S. dollar exchange rate; and
- Mexican and global economic conditions, including the levels of international interest rates.

Overview

After experiencing unprecedented challenges during 2020 and early 2021 as a result of the COVID-19 pandemic, we decided to rethink our strategy and operational and financial goals. On March 22, 2021, our Board of Directors approved the business plan of Petróleos Mexicanos and its Subsidiary Productive Companies for 2021-2025 (the "2021-2025 Business Plan), which effectively replaced our 2019-2023 business plan (the "2019-2023 Business Plan"). We developed the 2021-2025 Business Plan while maintaining the vision established by the Mexican Government, as embodied in the 2019-2023 Business Plan. The 2021-2025 Business Plan was approved by the Board of Directors in March 2021.

Business Plan

The Business Plan is our main planning instrument and is aligned with both the *Plan Nacional de Desarrollo* (National Development Plan or "PND") and the National Energy Policy. The Business Plan uses defined objectives to establish our strategic vision and includes the mechanisms and projects we are implementing in an effort to achieve our goals, with a particular focus on the following three main objectives:

Financial Optimization: We seek to more efficiently manage our cash flows to satisfy our commitments in operational, financial, and budgetary matters, through the maximization of our revenues and access to favorable financing sources and third-party relationships.

Sustainability: We intend to increasingly focus on our long-term viability as an oil company by pursuing the correct use of financial, human, and natural resources. This strategy includes a focus on levels of reserves, efficient hydrocarbon exploration and production activities, a fair and inclusive labor environment, the promotion and development of the communities where we operate and the reduction of our environmental footprint.

Efficiency and competitiveness: We hope to recover and strengthen our operating and commercial conditions to increase our business opportunities and to support the country's economic and social development. This objective focuses on achieving greater commercial competitiveness through improvements in process and logistics infrastructure and the efficient use of our resources.

Going Concern

Our consolidated financial statements as of December 31, 2021 and 2020 have been prepared on a going concern basis, which assumes that we can meet our payment obligations and our operating continuity. We discuss below, and in Notes 2-C and 22-F to our consolidated financial statements, the circumstances that have caused these negative trends and the concrete actions we are taking to improve our results, strengthen our ability to continue operating and achieve revenue maximization and efficiencies. We continue operating as a going concern, and our consolidated financial statements do not contain any adjustments that might result from the outcome of this uncertainty.

We have recognized continuous net losses during 2021, 2020 and 2019 of Ps. 294,775.9 million, Ps. 509,052.1 million and Ps. 282,112.0 million, respectively. In addition, we had a negative equity of Ps. 2,170,000.8 million and Ps. 2,404,727.0 million of December 31, 2021 and 2020, respectively, mainly due to continuous net losses. We had a negative working capital of Ps. 464,254.3 million and Ps. 442,550.3 million, as of December 31, 2021 and 2020, respectively.

We have substantial debt, mainly incurred to finance the capital expenditures needed to carry out our capital investment projects and to fund our operating expenses. Due to our heavy fiscal burden resulting from the payment of hydrocarbons extraction duties and other taxes, the cash flows from our operations in recent years have not been sufficient to fund our operations and investment

programs. As a result, our indebtedness has increased significantly, and we have had negative working capital for the years ended December 31, 2021 and 2020. In recent years, our level of indebtedness relative to our oil reserves has increased substantially and the Mexican Government has had to financially support us. Additionally, significant crude oil price volatility, our continued heavy tax burden and increased competition from private sector have negatively impacted our financial performance.

Our future cash flows, including the ability to refinance debt, are uncertain due to circumstances outside of our control. Any adverse impact from sustained decrease in crude oil prices below the budgeted average price for 2022 and from the slow-down of the economy would have an adverse impact on our results of operation, cash flows and may require us to consider additional actions to address these shortfalls.

The combined effect of the above-mentioned events indicates the existence of significant doubt about our ability to continue as a going concern. For more information on the circumstances that have caused these negative trends and the concrete actions we are taking to improve our results, strengthen our ability to continue operating and achieve revenue maximization and efficiencies, see Notes 22 and 28 to our consolidated financial statements included herein.

PEMEX and Mexico's Energy Policy

In December 2021, we announced ten actions we are taking in order to further develop our partnership with the Mexican Government in its ongoing strategy to reach energy independence. These steps are intended to: increase energy security and independence, improve operational, safety and environmental performance, increase efficiency and competitiveness, promote social responsibility and improve labor conditions.

The steps are the following:

- Maintain proven hydrocarbon reserves above 7 billion barrels of crude oil equivalent;
- Fulfill the requirements of the *Plan Nacional de Refinación* (National Refining Plan) to provide sufficient refined fuels to meet domestic market demand;
- Produce two million barrels of oil per day by 2024;
- Rehabilitate the Cangrejera petrochemical complex;
- Promote the production of fertilizers;
- Modernize our gas processing centers;
- Recover participation in the fuels market;
- Improve attention to critical risks;
- Reduce our overall indebtedness with the support and contributions of the Mexican Government; and
- Provide permanent positions for temporary workers.

Impact and Response to the COVID-19 Pandemic

The COVID-19 pandemic has had an adverse effect on our business, results of operations and financial condition.

The COVID-19 pandemic adversely affected our business and operations during 2020, mostly due to the volatility of international prices of oil, oil products and natural gas, which were strongly influenced by conditions and expectations of global supply and demand. During 2021, oil prices and oil demand have recovered significantly. However, our business continues to be exposed to the ongoing effects caused by the COVID-19 pandemic.

Primarily as a result of the worldwide economic slowdown and, in particular, the decrease in fuel demand, we had a 32% decrease in its domestic sales of petroleum products as of December 31, 2020 as compared to 2019. During 2021, hydrocarbon prices recovered with an 85.6% increase in the price of the Mexican crude oil export mix, which was reflected in the increase in the value of our sales.

Mexican Government support: On April 21, 2020, the Mexican Government, through a presidential decree, granted us a reduction in our tax burden equal to Ps. 65.0 million for 2020, which consists of a fiscal credit applicable to the *Derecho por la Utilidad Compartida* (Profit-sharing Duty, or "DUC") up to such amount. This decrease in the Profit-sharing Duty is incremental to the one resulting from the decrease of the rate from 65% to 58% in 2020 in accordance with amendments to the 2020 Hydrocarbons Revenue Law. On February 19, 2021, the Mexican Government, through a presidential decree, granted us a reduction in our tax

burden equal to Ps. 73.3 billion for 2021 via a tax credit applicable to the Profit-sharing Duty. This tax incentive is in addition to the measures announced in December 2019 that adjusted our tax regime to reduce our Profit-Sharing Duty by 11 percentage points to 54% by 2021 in two incremental steps. During 2021, the Ministry of Finance and Public Credit provided us with capital injections of Ps. 202 billion to cover debt amortizations due in 2021. See Note 22 to our consolidated financial statements included herein.

Budget implications*:* We prepared our budget for 2022 based on a Mexican crude oil basket price of U.S. $55.1 per barrel. As a result of high crude oil prices, we entered into derivative financial instruments to hedge our risk exposure to drops in prices below the level at which the expected financial balance of PEMEX is approximately zero (U.S. $63 per barrel). These derivative financial instruments are intended to hedge a proportion of our exposure of up to five U.S. dollars below the budgeted price.

The Federal Budget for 2022 authorized us to have a budget deficit of Ps. 62,750 million. This deficit does not consider payments of principal of our debt which is due in 2022.

Taking into consideration the conditions described above and the level of prices as of the date of this report, we hope to increase our revenues, improve our budget deficit and potentially increase our capital expenditures during the year.

Results of operations and financial condition in 2021

For the year ended December 31, 2021, our loss decreased, from a net loss of Ps. 509.1 billion (U.S. $24.7 billion) in 2020 to a net loss of Ps. 294.8 billion (U.S. $14.3 billion) in 2021. This lower net loss was primarily due to:

- a Ps. 542.0 billion increase in total sales, mainly due to an increase in the average price of crude oil and natural gas;
- a Ps. 35.1 billion decrease in impairment of wells, pipelines, properties, plant and equipment;
- a Ps. 5.8 billion increase in other income;
- a Ps. 12.2 billion increase in financing income; and
- a Ps. 83.2 billion decrease in exchange loss.

These effects were partially offset by:

- a Ps. 234.0 billion increase in cost of sales, mainly due to an increase in purchases of products;
- a Ps. 49.8 billion increase in other expenses;
- a Ps. 7.1 billion increase in administrative expenses and distribution, transportation and sale expenses;
- a Ps. 2.8 billion increase in financing cost;
- a Ps. 42.3 billion increase in cost of derivative financial instruments, net;
- a Ps. 6.7 billion increase in impairment of joint ventures; and
- a Ps. 121.8 billion increase in taxes and other duties.

For more information on our results of operations, see "—Results of Operations of Petróleos Mexicanos, the Subsidiary Entities and the Subsidiary Companies—For the Year Ended December 31, 2021 Compared to the Year Ended December 31, 2020" below.

In 2021, our total equity (deficit) improved by Ps. 234.8 billion from negative Ps. 2,404.7 billion as of December 31, 2020 to negative Ps. 2,170.0 billion as of December 31, 2021. For more information on the decrease of our total equity (deficit) see "—Liquidity and Capital Resources—Equity Structure and Mexican Government Contributions" below. This decrease was mainly due to our net loss for the year of Ps. 294.8 billion, Ps. 205.4 billion in actuarial losses on employee benefits and a Ps. 9.0 billion decrease in total debt.

Our accounts receivables increased 46.7% in 2021, from Ps. 189.8 billion as of December 31, 2020 to Ps. 278.5 billion as of December 31, 2021, mainly due to to an increase in our accounts receivable from customers, sundry debtors, IEPS tax and prepaid taxes.

As of December 31, 2021, we owed our suppliers Ps. 264.1 billion as compared to Ps. 282.0 billion as of December 31, 2020. As of December 31, 2021, we have paid the total outstanding balance due to suppliers and contractors as of December 31, 2020 and, as of March 31, 2022, we have paid approximately 38.1% of the total outstanding balance due to suppliers and contractors as of December 31, 2021.

Operating Challenges

In 2021, our crude oil and condensates production totaled 1,736 thousand barrels per day, as compared to the average production of 1,686 thousand barrels per day in 2020. Thus, the upward trend in liquids production continued, mainly due to the contribution of our strategy to develop new fields and early production of these fields, which produced 322 thousand barrels as of December 31, 2021. We incorporated wells from our new fields strategy in the Southwest, Southern and Northern Marine Regions, and incrementally increased activity in fields such as Madrefil, Teotleco, Arroyo Zanapa, Juspí, Tupilco Profundo, Castarrical and Sini in the South Region; Ek-Balam and Zaap in the Northeast Marine Region; and Ixtal and Yaxché in the Southwest Marine Region. We further describe the increase in production under "Item 4—Information on the Company—Business Overview—Exploration and Production—Crude Oil and Natural Gas Production."

Our intitiatives include the following:

- Accelerating incremental production associated with the strategy to develop new fields.
- Shortening time to develop and bring newly discovered fields into production.
- Focus on well maintenance to sustain base production in mature fields (minor workovers, stimulations, cleanups and optimizations).
- Immediate attention to operational problems and reduction of operational intervention times for the restoration of failed wells.
- Incorporation of early production from exploratory wells.

In 2021, we processed a total of 711.6 thousand barrels of crude oil per day, 121.0 thousand barrels per day more than in 2020, which represents a 20.5% increase. The increase is mainly due to the rehabilitation works at our National Refining System facilities. As a result, we used 43.4% of our primary distillation capacity in 2021, a 7.4% increase as compared to 2020. Salina Cruz, Tula, Cadereyta and Salamanca refineries recorded a 46.2% average utilization, which is above the National Refining System's average. In 2021, our variable refining margin increased by U.S. $2.16 per barrel from U.S. $0.76 per barrel in 2020 to U.S. $2.92 per barrel in 2021. This increase was primarily due to the recovery of petroleum products' prices in the Gulf Coast.

New Accounting Standards

The following new accounting standards were effective from January 1, 2021, but they did not have a material effect on our consolidated financial statements:

Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16) ("Phase 2 Amendments") starting on January 1, 2021. See Note 4 to our consolidated financial statements as of December 31, 2021 included herein.

Recently Issued Accounting Standards

Some of the new accounting standards went into effect for annual periods beginning January 1, 2022 and earlier application is permitted. However, we have not early adopted the new or amended standards in preparing these consolidated financial statements (see Note 29 to our consolidated financial statements included herein). The following amended standards and interpretations are not expected to have a significant impact on our consolidated financial statements.

i. Applicable as of January 1, 2022:

- Reference to Conceptual Framework (Amendments to IFRS 3)
- Property, Plant and Equipment: Proceeds before Intended Use (Amendments to IAS 16)
- Onerous Contracts – Cost of Fulfilling a Contract (Amendments to IAS 37)
- Annual Improvements to IFRS Standards 2018–2020 (Amendments to IFRS 1, IFRS 9 and IAS 41)
- COVID-19-Related Rent Concessions beyond 30 June 2021 (Amendment to IFRS 16)

ii. Applicable as of January 1, 2023:

- Insurance Contracts (Amendments to IFRS 17)
- Classification of Liabilities as Current or Non-current (Amendments to IAS 1)
- Definition of Accounting Estimates (Amendments to IAS 8)

- Disclosure of Accounting Policies (Amendments to IAS 1 and IFRS Practice Statement 2)
- Deferred Tax related to Assets and Liabilities arising from a Single Transaction (Amendments to IAS 12)

For more information about recently issued accounting standards see Note 29 to our consolidated financial statements included herein.

Sales Volumes and Prices

The profitability of our operations in any particular accounting period is directly related to the sales volume of, and average realized prices for, the crude oil and natural gas that we sell. These average realized prices for crude oil and natural gas fluctuate from one period to another due to world market conditions and other factors.

Export Volumes and Prices

Pemex Exploration and Production sells crude oil to PMI, which then sells it to international clients. The volume of crude oil that we export is the volume delivered to international clients as adjusted for water content according to the bill of lading and standard market practice. PMI bases crude oil export price formulas on a basket of international reference prices and a constant set according to specific market conditions. We determine export prices of refined products, petrochemicals and natural gas by reference to market conditions and direct negotiations with our clients.

Significant changes in international crude oil prices directly affect our financial results. The impact of changes in crude oil prices on our refining activities and petrochemicals business depends on:

- the magnitude of the change in crude oil prices;
- how quickly petroleum and petrochemical product prices in international markets adjust to reflect changes in crude oil prices; and
- the extent to which prices in Mexico, where we sell most of our petroleum products and petrochemicals, reflect international prices for those products.

The following table sets forth the weighted average market price per barrel of crude oil that PMI received from exports and the average price of the United States benchmark (as the main market for Mexican crude oil), West Texas Intermediate (or WTI) crude oil, for the years indicated. The average price differential between WTI and the crude oil that we exported in the last three years fluctuated between U.S. $1.50 in 2019 to U.S. $4.04 in 2021, which is mainly the result of fluctuations in the price of other benchmarks on which our pricing formulas for crude oil are based. See "Item 4—Information on the Company—Business Overview—International Trading."

	Year ended December 31,		
	2021	2020	2019
	(in dollars per barrel)		
West Texas Intermediate crude oil average price	U.S. $ 68.10	U.S. $ 39.25	U.S. $ 57.03
PEMEX crude oil weighted average export price.....	65.31	36.24	55.53

Note: The numbers in this table are daily average prices for the full year, which differ from spot prices at year end. On April 22, 2022, the spot price for West Texas Intermediate crude oil was U.S. $102.07 per barrel and the spot price for the PEMEX crude oil basket was an estimated U.S. $100.21 per barrel.

Sources: PEMEX's oil statistics and Platt's U.S. Marketscan (S&P Global Inc.).

Domestic Prices

As of December 31, 2017, domestic fuel prices are fully liberalized and are determined according to market forces and may vary without regard to any specific range determined by the Mexican Government. For further information on domestic prices, see "Item 4—Business Overview—Industrial Transformation—Refining—Pricing Regulations."

The following table compares the average prices in nominal terms of selected petroleum and petrochemical products in Mexico for the years indicated:

	Year ended December 31,		
	2021	2020	2019
Petroleum Products			
Unleaded regular gasoline[1]	Ps. 1,995.23	Ps. 1,391.19	Ps. 1,671.92
Premium gasoline[1]	2,086.49	1,501.62	1,821.32
Diesel[1]	1,922.21	1,438.57	1,813.10
Jet fuel[1]	1,832.08	1,415.72	1,824.23
Natural Gas[2]	13.16	4.61	5.01
Liquified Petroleum[2]	34.16	18.41	18.60
Selected Petrochemicals			
Ammonia[3]	18,334.19	6,317.20	7,556.74
Polyethylene[3]	30,215.87	17,720.23	17,601.39

(1) Pesos per barrel.
(2) Pesos per hundred cubic feet.
(3) Pesos per ton.
Source: Petróleos Mexicanos.

Hydrocarbon Duties and Income Taxes

The following table sets forth the taxes and duties that we recorded for each of the past three years.

	Year ended December 31,		
	2021	2020	2019
		(in millions of pesos)[1]	
Hydrocarbon extraction duties	Ps. 306,827	Ps. 154,609	Ps. 372,812
Income tax (benefit)	521	30,963	(28,989)
Total	Ps. 307,348	Ps. 185,572	Ps. 343,823

Note: For a description of these taxes and duties, see "Item 4—Information on the Company—Taxes, Duties and Other Payments to the Mexican Government." Numbers may not total due to rounding.
(1) Figures are stated in nominal pesos.
Source: PEMEX's audited consolidated financial statements, prepared in accordance with IFRS.

Relation to the Mexican Government

Petróleos Mexicanos and our subsidiary entities are public entities of the Mexican Government, rather than Mexican corporations. Therefore, we do not have the power to issue shares of equity securities evidencing ownership interests and are not required, unlike Mexican corporations, to have multiple shareholders. However, our financing obligations do not constitute obligations of and are not guaranteed by the Mexican Government. The President of Mexico appoints five of the ten members of the Board of Directors of Petróleos Mexicanos as representatives of the Mexican Government, including the Secretary of Energy, who serves as the Chairperson of the Board of Directors of Petróleos Mexicanos, and the Secretary of Finance and Public Credit. The President of Mexico also appoints five independent members to the Board of Directors of Petróleos Mexicanos, whose appointments are ratified by the Senate.

Pursuant to the Petróleos Mexicanos Law, our consolidated annual budget, including our financing program, must be submitted to the Ministry of Finance and Public Credit, which has the authority to adjust our financial balance goal and the ceiling on our wage and salary expenditures for the fiscal year. The Mexican Government incorporates our consolidated annual budget and financing program into its budget, which the Chamber of Deputies must approve each year. The Mexican Congress has the authority to adjust our annual financial balance goal at any time by amending the applicable law. In addition, any adjustment proposed by the Board of Directors of Petróleos Mexicanos to change our annual financial balance goal or increase the limit on our wage and salary expenditures or our financing program must be approved by the Chamber of Deputies.

Consolidation

Our financial statements consolidate the results of Petróleos Mexicanos, our subsidiary entities and the subsidiary companies. Certain non-material subsidiary companies are not consolidated and are accounted for under either the cost method or the equity method. For a list of the consolidated subsidiary companies, see Note 3-A and Note 5 to our consolidated financial statements included herein.

Export Agreements and Production Agreements

Though Mexico is not a member of OPEC, it has periodically announced increases and decreases in our crude oil exports reflecting production revisions made by other oil producing countries and entered into agreements with OPEC and non-OPEC members to reduce its oil exports, in order to contribute to crude oil prices stabilization.

On April 12, 2020, the OPEC+ countries, including Mexico, agreed to reduce their overall crude oil production by 9.7 million barrels per day from May 1, 2020 through June 30, 2020, by 7.7 million barrels per day from July 1, 2020 through December 31, 2020 and by 5.8 million barrels per day from January 1, 2021 through April 30, 2022. Pursuant to this agreement, Mexico agreed to reduce its crude oil production by 100,000 barrels per day for a period of two months beginning on May 1, 2020. No further agreements during 2021 and up to April 2022 have been made between Mexico and the OPEC and non-OPEC members.

Selected Financial Data

The selected statement of comprehensive income (loss), statement of financial position and cash flows data set forth below have been derived from, and should be read in conjunction with, our consolidated financial statements.

	Year ended December 31,[1]			
	2021	2020	2019	2021[2]
	(in millions of pesos)			(in millions of U.S. dollars)
Statement of Comprehensive Income (Loss) Data				
Net sales	1,495,629	953,662	1,401,971	72,662
Operating income	228,928	(63,063)	102,829	11,122
Financing income	28,907	16,742	29,236	1,404
Financing cost	(164,572)	(161,765)	(132,861)	(7,995)
Derivative financial instruments (cost) income—Net	(25,224)	17,096	(23,264)	(1,225)
Exchange (loss) gain—Net	(45,675)	(128,949)	86,930	(2,219)
Net (loss) for the period	(294,776)	(509,052)	(282,112)	(14,321)
Statement of Financial Position Data (end of period)				
Cash and cash equivalents	76,506	39,990	60,622	3,717
Total assets	2,052,098	1,928,488	1,984,247	99,696
Short-term debt	492,284	391,097	244,924	23,916
Long-term debt	1,757,412	1,867,630	1,738,250	85,380
Total long-term liabilities	3,299,451	3,560,805	3,363,453	160,296
Total equity (deficit)	(2,170,001)	(2,404,727)	(1,931,409)	(105,424)
Statement of Cash Flows				
Depreciation and amortization	133,431	129,632	137,187	6,482
Acquisition of wells, pipelines, properties, plant and equipment[3]	(209,592)	(114,977)	(109,654)	(10,183)

(1) Includes Petróleos Mexicanos, the subsidiary entities and the subsidiary companies listed in Note 5 to our consolidated financial statements included herein.

(2) Translations into U.S. dollars of amounts in pesos have been made at the exchange rate established by the Ministry of Finance and Public Credit for accounting purposes of Ps. 20.5835 = U.S. $1.00 at December 31, 2021. Such translations should not be construed as a representation that the peso amounts have been or could be converted into U.S. dollar amounts at the foregoing or any other rate.

(3) Includes capitalized financing cost. See Note 13-A to our consolidated financial statements included herein and "Item 5—Operating and Financial Review and Prospects—Liquidity and Capital Resources."

Source: PEMEX's consolidated financial statements, prepared in accordance with IFRS, as it relates to the selected statements of comprehensive income, statement of financial position and statement of cash flows data; and Petróleos Mexicanos, as it relates to other financial data.

Results of Operations of Petróleos Mexicanos, the Subsidiary Entities and the Subsidiary Companies—For the Year Ended December 31, 2021 Compared to the Year Ended December 31, 2020

Total Sales

Total sales increased by 56.8% or 541.9 billion in 2021, from Ps. 953.7 billion in 2020 to Ps. 1,495.6 billion in 2021, primarily due to increases in domestic sales prices of gasoline, diesel, fuel oil, jet fuel, natural gas and natural gas liquids and an 85.6% increase in the weighted average price of Mexican crude oil for export sales. From January 1 to December 31, 2021, the weighted average Mexican export crude oil price was U.S. $65.85 per barrel, as compared to U.S. $35.47 per barrel for the same period in 2020.

Domestic Sales

Domestic sales increased by 51.3% or 258.4 billion in 2021, from Ps. 503.7 in 2020 to Ps. 762.1 billion in 2021, mainly due to increases in the sales prices of gasoline, diesel, fuel oil, jet fuel, natural gas and natural gas liquids. Domestic sales of petroleum products increased by 40.6% in 2021, from Ps. 409.1 billion in 2020 to Ps. 575.2 billion in 2021, mainly due to a 41.1% increase in the sales price of gasoline, a 34.3% increase in the sales price of diesel, 60.4% increase in the sales price of fuel oil and 29.4% increase in the sales price of jet fuel.

Domestic sales of natural gas increased by 135.8% in 2021, from Ps. 22.6 billion in 2020 to Ps. 53.3 billion in 2021, primarily due to a 185.7% increase in the average sales price.

Domestic sales of LPG increased by 93.5% in 2021, from Ps. 30.8 billion in 2020 to Ps. 59.6 billion in 2021. This increase was primarily due to an 85.5% increase in its average sales price.

Export Sales

Export sales increased by 63.6% in peso terms in 2021 (with U.S. dollar-denominated export revenues translated to pesos at the exchange rate on the date of the corresponding export sale) from Ps. 445.2 billion in 2020 to Ps. 728.5 billion in 2021. This increase was mainly due to an 85.6% increase in the weighted average Mexican export crude oil price in 2021, compared to 2020. From January 1 to December 31, 2021, the weighted average Mexican export crude oil price was U.S. $65.85 per barrel, compared to U.S. $35.47 per barrel for the same period in 2020.

Excluding the trading activities of the Trading Companies (in order to show only the amount of export sales related to the subsidiary entities), export sales by the subsidiary entities to third parties increased by 60.8% in peso terms, from Ps. 349.1 billion in 2020 to Ps. 561.2 billion in 2021. In U.S. dollar terms, excluding the trading activities of the Trading Companies, total export sales (which are U.S. dollar denominated) increased by 75.8% in 2021, from U.S. $16.1 billion in 2020 to U.S. $28.3 billion in 2021. This was primarily due to the 85.6% increase in the weighted average Mexican crude oil export price. The trading and export activities of the Trading Companies generated additional revenues of Ps. 167.3 billion in 2021, 74.0% higher in peso terms than the Ps. 96.1 billion of additional revenues generated in 2020. This increase was mainly due to an increase in the average prices of diesel, gasoline and fuel oil. Export sales of PMI NASA, one of our principal Trading Companies, increased by 64.2% in 2021, from Ps. 54.7 billion in 2020 to Ps. 89.8 billion in 2021.

Crude oil and condensate export sales accounted for 86.1% of total export sales (excluding the trading activities of the Trading Companies) in 2021, as compared to 90.3% in 2020. These crude oil and condensate sales increased in peso terms by 53.3% in 2021, from Ps. 315.1 billion in 2020 to Ps. 483.1 billion in 2021, and in U.S. dollar terms by 67.1%, from U.S. $14.6 billion in 2020 to U.S. $24.4 billion in 2021. The weighted average Mexican crude oil export price in 2021 was 85.6% higher than the weighted average price of U.S. $35.47 per barrel in 2020.

Export sales of petroleum products, including natural gas and natural gas liquids, by our industrial transformation segment increased from 8.7% of total export sales (excluding the trading activities of the Trading Companies) in 2020 to 12.7% of those export sales in 2021. Export sales of petroleum products, including products derived from natural gas and natural gas liquids, increased by 133.1%, from Ps. 30.5 billion in 2020 to Ps. 71.1 billion in 2021, primarily due to an increase in the sales prices of fuel oil.

Export sales of petrochemical products (including certain byproducts of the petrochemical process) increased by Ps. 3,640.6 million in 2021, from Ps. 3,449.9 million in 2020 to Ps. 7,090.5 million in 2021, primarily due to an increase in export sales by Grupo Fertinal, S.A. de C.V. in 2021.

Services Income

Services income increased by 6.4% in 2021, from Ps. 4.7 billion in 2020 to Ps. 5.0 billion in 2021, primarily as a result of an increase in transportation services provided by Pemex Industrial Transformation and Pemex Logistics to third parties.

Cost of Sales

Cost of sales increased by 28.1%, from Ps. 832.6 billion in 2020 to Ps. 1.066.7 billion in 2021. This increase was mainly due to: (1) a Ps. 163.0 billion increase in import purchases, primarily of Premium and Magna gasoline, diesel, jet fuel and natural gas, due to an increase in the purchase price of these products; (2) a Ps. 45.0 billion increase in exploration and extraction taxes and duties, mainly due to the recovery of hydrocarbon prices from lows reached during the months of the COVID-19 pandemic; and (3) an increase of Ps. 21.7 billion in purchases of crude oil from third parties who hold contracts with National Hydrocarbon Commission due to increases of crude oil price.

Impairment of Wells, Pipelines, Properties, Plant and Equipment

Impairment of wells, pipelines, properties, plant and equipment decreased by Ps. 35.2 billion in 2021, from a net impairment of Ps. (36.4) billion in 2020 to a net impairment of Ps. (1.2) billion in 2021. This net impairment was primarily due to Ps. 32.2 billion in the cash generating units of Pemex Industrial Transformation, mainly due to lower production levels in our refineries. These lower production levels were primarily the result of the inability to achieve the projected production rate, as the Ultra Low Sulfur Gasoline (Gubas) and Ultra Low Sulfur Diesel (Dubas) projects have not received resources for their continuation and no provision is made for the continuation of these works within the approved budget for 2022. The lower production levels were partially offset by a net reversal of impairment of Ps. 34.6 billion in the cash generating units of Pemex Exploration and Production, mainly due to an increase in the effect of exchange rates and an increase in crude oil prices.

Administrative Expenses and Distribution, Transportation and Sale Expenses

Administrative expenses and distribution, transportation and sale expenses increased by Ps. 7.1 billion in 2021, from Ps. 158.3 billion in 2020 to Ps. 165.4 billion in 2021, mainly due to an increase relating to the periodic cost of employee benefits and maintenance.

Other Revenues

Other revenues increased by Ps. 5.8 billion in 2021, from Ps. 11.8 billion in 2020 to Ps. 17.6 billion in 2021. This increase was mainly due to Ps. 1.7 billion of funds received from *Fondo Nacional de Infraestructura* (National Infrastructure Fund, or "FONADIN") for payments to contractors of the Tula Refinery rehabilitation project and Ps. 2.8 billion from the recognition of partial income from remediation agreement in favor of Petróleos Mexicanos.

Other Expenses

Other expenses increased by Ps. 49.8 billion in 2021, from Ps. 1.2 billion in 2020 to Ps. 51.0 billion in 2021. This increase was mainly due to the recognition of Ps. 44.6 billion in disposal of fixed assets without development plans in Pemex Exploration and Production.

Financing Income

Financing income increased by Ps. 12.2 billion in 2021, from Ps. 16.7 billion in 2020 to Ps. 28.9 in 2021. This increase was mainly due to effects from the recognition of changes in accounts receivable as a result of the sale of hydrocarbons to Asia.

Financing Costs

Financing costs increased by Ps. 2.8 billion in 2021, from Ps. 161.8 billion in 2020 to Ps. 164.6 billion in 2021, mainly as a result of the effects from the liability management transactions conducted in December 2021.

Derivative Financial Instruments (cost), net

Derivative financial instruments (cost), net, increased by Ps. (42.3) billion, from a derivative financial instruments income of Ps. 17.1 billion in 2020 to a loss of Ps. (25.2) billion in 2021, mainly as a result of (1) a decrease in the fair value of our cross-currency swaps, arising from the appreciation of the U.S. dollar against other currencies in which our debt is denominated and (2) a net decrease in other derivative financial instruments, such as currency options and crude oil options.

Exchange Loss, Net

A substantial portion of our indebtedness, 85.7% as of December 31, 2021, is denominated in foreign currencies. Our exchange loss, net, decreased by Ps. 83.2 billion in 2021, from an exchange loss of Ps. 128.9 billion in 2020 to an exchange loss of Ps. 45.7 billion in 2021, primarily as a result of a 3.2% depreciation of the peso relative to the U.S. dollar in 2021. Due to the fact that 100% of our revenues from exports and domestic sales are referenced to prices denominated in U.S. dollars, and only 72% of our expenses, including financing costs, are linked to U.S. dollar prices, the depreciation of the peso relative to the U.S. dollar benefits our ability to meet peso-denominated obligations. The value of the peso in U.S. dollar terms depreciated by 3.2% in 2021, from Ps. 19.9487 per U.S. $1.00 on December 31, 2020 to Ps. 20.5835 per U.S. $1.00 on December 31, 2021, as compared to a 5.9% depreciation of the peso in U.S. dollar terms in 2020.

Impairment Loss-sharing in joint ventures and associates

The increase in impairment of loss-sharing in joint ventures and associates of Ps. 6.73 billion was mainly due to the impairment in the investment of Deer Park as of December 31, 2021.

Taxes, Duties and Other

The Profit-Sharing Duty and other duties and taxes paid increased by 65.6% in 2021, from Ps. 185.6 billion in 2020, to Ps. 307.3 billion in 2021, principally driven by the 85.6% increase in the weighted average export price of Mexican crude oil, from U.S. $35.47 per barrel in 2020 to U.S. $65.85 per barrel in 2021. Duties and taxes represented 19.5% and 20.5% of total sales in 2020 and 2021, respectively.

Net Income/Loss

In 2021, we had a net loss of Ps. 294.8 billion from Ps. 1,495.6 billion in total sales revenues, as compared to a net loss of Ps. 509.1 billion from Ps. 953.7 billion in total sales revenues in 2020. This decrease in net loss relative to 2020 was primarily explained by:

- a Ps. 542.0 billion increase in total sales, mainly due to an increase in the average price of crude oil and natural gas;
- a Ps. 35.1 billion decrease in impairment of wells, pipelines, properties, plant and equipment;
- a Ps. 5.8 billion increase in other income;
- a Ps. 12.2 billion increase in financing income; and
- a Ps. 83.3 billion decrease in exchange loss.

These effects were partially offset by:

- a Ps. 234.0 billion increase in cost of sales, mainly due to an increase in purchases of products;
- a Ps. 49.8 billion increase in other expenses;
- a Ps. 7.1 billion increase in administrative expenses and distribution, transportation and sale expenses;
- a Ps. 2.8 billion increase in financing cost;
- a Ps. 42.3 billion increase in cost of derivative financial instruments, net;
- a Ps. 6.7 billion increase in impairment of joint ventures; and
- a Ps. 121.8 billion increase in taxes and other duties.

Other Comprehensive Results

In 2021, we had a total comprehensive loss of Ps. 81.6 billion as compared to Ps. 520.4 billion in 2020, primarily due to an increase in actuarial gains related to retirement and post-employment benefits, mainly due to an increase in the discount and return on plan assets rate from 7.08% as of December 31, 2020 to 8.46% as of December 31, 2021.

Results of Operations of Petróleos Mexicanos, the Subsidiary Entities and the Subsidiary Companies—For the Year Ended December 31, 2020 Compared to the Year Ended December 31, 2019

Total Sales

Total sales decreased by 32.0% or 448.3 billion in 2020, from Ps. 1,402.0 billion in 2019 to Ps. 953.7 billion in 2020, primarily due to a decrease in the sales volume of petroleum products and the weighted average price of Mexican crude oil.

Domestic Sales

Domestic sales decreased by 37.6% or 303.3 billion in 2020, from Ps. 807.0 billion in 2019 to Ps. 503.7 in 2020, mainly due to decreases in the sales volume of gasoline, diesel, fuel oil and jet fuel. Domestic sales of petroleum products decreased by 43.1% in 2020, from Ps. 718.7 billion in 2019 to Ps. 409.1 billion in 2020, mainly due to a 26.1% decrease in the sales volume of gasoline, a 29.0% decrease in the sales volume of diesel, 27.6% decrease in the sales volume of fuel oil and 53.4% decrease in the sales volume of jet fuel. The average sales price of gasoline, diesel, fuel oil and jet fuel decreased 38.2%, 44.8%, 69.8% and 63.8%, respectively, in 2020 as compared to 2019, as a result of decreased demand. The decreased demand was primarily the result of lower economic activity caused by the COVID-19 pandemic and a drop in the prices of international hydrocarbons and refined products.

Domestic sales of natural gas decreased by 20.7% in 2020, from Ps. 28.5 billion in 2019 to Ps. 22.6 billion in 2020, primarily due to a 20.6% decrease in the average sales price and 13.6% decrease in the sales volume of natural gas. Domestic sales of LPG decreased by 4.3% in 2020, from Ps. 32.2 billion in 2019 to Ps. 30.8 billion in 2020. This decrease was primarily due to a 4.3% decrease in the average sales price and 3.4% decrease in the sales volume, mainly due to lower economic activity caused by the COVID-19 pandemic.

Export Sales

Export sales decreased by 24.0% in peso terms in 2020 (with U.S. dollar-denominated export revenues translated to pesos at the exchange rate on the date of the corresponding export sale) from Ps. 585.8 billion in 2019 to Ps. 445.2 billion in 2020. This decrease was mainly due to a 36.2% decrease in the weighted average Mexican export crude oil price in 2020, from U.S. $55.60 per barrel in 2019 to U.S. $35.47 per barrel in 2020.

Excluding the trading activities of the Trading Companies (in order to show only the amount of export sales related to the subsidiary entities), export sales by the subsidiary entities to third parties decreased by 26.4% in peso terms, from Ps. 474.0 billion in 2019 to Ps. 349.1 billion in 2020. In U.S. dollar terms, excluding the trading activities of the Trading Companies, total export sales (which are U.S. dollar denominated) decreased by 34.5% in 2020, from U.S. $24.6 billion in 2019 to U.S. $16.1 billion in 2020. This was primarily due to the 36.2% decrease in the weighted average Mexican crude oil export price. The trading and export activities of the Trading Companies generated additional marginal revenues of Ps. 96.1 billion in 2020, 14.0% lower in peso terms than the Ps. 111.8 billion of additional revenues generated in 2019. This decrease was mainly due to a decrease in the average prices of diesel and gasoline. Export sales of PMI-NASA, one of our principal Trading Companies, decreased by 26.4% in 2020, from Ps. 74.3 billion in 2019 to Ps. 54.7 billion in 2020.

Crude oil and condensate export sales accounted for 90.3% of total export sales (excluding the trading activities of the Trading Companies) in 2020, as compared to 90.8% in 2019. These crude oil and condensate sales decreased in peso terms by 26.8% in 2020, from Ps. 430.4 billion in 2019 to Ps. 315.1 billion in 2020, and in U.S. dollar terms by 34.5%, from U.S. $22.3 billion in 2019 to U.S. $14.6 billion in 2020. The weighted average Mexican crude oil export price in 2020 was 36.2% lower than the weighted average price of U.S. $55.60 per barrel in 2019.

Export sales of petroleum products, including natural gas and natural gas liquids, by our industrial transformation segment decreased from 8.2% of total export sales (excluding the trading activities of the Trading Companies) in 2019 to 8.7% of those export sales in 2020. Export sales of petroleum products, including products derived from natural gas and natural gas liquids, decreased by 21.6%, from Ps. 38.9 billion in 2019 to Ps. 30.5 billion in 2020, primarily due to a decrease in the sales volume of naphtha.

Export sales of petrochemical products (including certain byproducts of the petrochemical process) decreased by Ps. 1,255.4 million in 2020, from Ps. 4,705.3 million in 2019 to Ps. 3,449.9 million in 2020, primarily due to a decrease in export sales by Grupo Fertinal, S.A. de C.V. in 2020.

Services Income

Services income decreased by 48.4% in 2020, from Ps. 9.1 billion in 2019 to Ps. 4.7 billion in 2020, primarily as a result of a decrease in transportation services provided by Pemex Industrial Transformation and Pemex Logistics to third parties.

Cost of Sales

Cost of sales decreased by 25.9%, from Ps. 1,122.9 billion in 2019 to Ps. 832.6 billion in 2020. This decrease was mainly due to: (1) a Ps. 206.4 billion decrease in import purchases, primarily Magna gasoline, diesel and jet fuel, due to decreased demand. The decreased demand was primarily the result of the lower economic activity caused by the COVID-19 pandemic and a drop in the international hydrocarbons and refined products prices; (2) a Ps. 23.5 billion decrease in taxes and duties on exploration and extraction of hydrocarbons resulting from lower average sales prices and (3) a decrease of Ps. 54.0 billion in unsuccessful wells.

Impairment of Wells, Pipelines, Properties, Plant and Equipment

Impairment of wells, pipelines, properties, plant and equipment increased by Ps. (5.1) billion in 2020, from a net impairment of Ps. (31.3) billion in 2019 to a net impairment of Ps. (36.4) billion in 2020. This net impairment was primarily due to Ps. (71.8) billion in the cash generating units of Pemex Industrial Transformation, mainly due to lower production levels, at the Madero, Minatitlan, and Salamanca Refineries. These lower production levels were primarily the result of a lower crude oil processing rate than previously projected and a decrease in prices of refined products. The lower production levels were partially offset by a net reversal of impairment of Ps. 35.0 billion in the cash generating units of Pemex Exploration and Production, mainly due to an increase in the effect of exchange rates and an increase in projected crude and oil prices and volume.

Administrative Expenses and Distribution, Transportation and Sale Expenses

Administrative expenses and distribution, transportation and sale expenses increased by Ps. 5.6 billion in 2020, from Ps. 152.7 billion in 2019 to Ps. 158.3 in 2020, mainly due to an increase relating to the periodic cost of employee benefits.

Other Revenues

Other revenues decreased by Ps. 3.1 billion in 2020, from Ps. 14.9 billion in 2019 to Ps. 11.8 billion in 2020. This decrease was mainly due to a Ps. 2.3 billion decrease in income from insurance recovery.

Other Expenses

Other expenses decreased by Ps. 6.0 billion in 2020, from Ps. 7.2 billion in 2019 to Ps. 1.2 billion in 2020. This decrease was mainly due to a decrease of Ps. 5.4 billion in disposal of wells, pipelines, properties, plant and equipment.

Financing Income

Financing income decreased by Ps. 12.5 billion in 2020, from Ps. 29.2 billion in 2019 to Ps. 16.7 billion in 2020. This decrease was mainly due to effects from the liability management transactions conducted in September 2019.

Financing Costs

Financing costs increased by Ps. 28.9 billion in 2020, from Ps. 132.9 billion in 2019 to Ps. 161.8 billion in 2020, mainly due to an increase in interest expenses as a result of the effects of depreciation of the peso against the U.S. dollar and the effects of variations in sales prices and volume of exports.

Derivative Financial Instruments Income, Net

Derivative financial instruments income, net, increased by Ps. 40.3 billion, from a derivative financial instruments cost of Ps. 23.3 billion in 2019 to an income of Ps. 17.0 billion in 2020, mainly as a result of (1) the increase in the fair value of our favorable cross-currency swaps, arising from the depreciation of the U.S. dollar against other currencies in which our debt is denominated;

(2) the gains from our crude oil options, as a result of the decrease in crude oil prices and (3) a net increase in other derivative financial instruments, such as currency options.

Exchange Loss, Net

A substantial portion of our indebtedness, 87.19% as of December 31, 2020, is denominated in foreign currencies. Our exchange loss, net, increased by Ps. 215.8 billion in 2020, from an exchange gain of Ps. 86.9 billion in 2019 to an exchange loss of Ps. 128.9 billion in 2020, primarily as a result of a 5.9% depreciation of the peso relative to the U.S. dollar in 2020. Due to the fact that 100% of our revenues from exports and domestic sales are referenced to prices denominated in U.S. dollars, and only 72% of our expenses, including financing costs, are linked to U.S. dollar prices, the depreciation of the peso relative to the U.S. dollar had a positive effect on our ability to meet peso-denominated obligations. The value of the peso in U.S. dollar terms depreciated by 5.9% in 2020, from Ps. 18.8452 per U.S. $1.00 on December 31, 2019 to Ps. 19.9487 per U.S. $1.00 on December 31, 2020, as compared to a 4.3% appreciation of the peso in U.S. dollar terms in 2019.

Taxes, Duties and Other

The Profit-Sharing Duty and other duties and taxes paid decreased by 46.0% in 2020, from Ps. 343.8 billion in 2019 to Ps. 185.6 billion in 2020, mainly due to (1) the 36.2% decrease in the weighted average export price of Mexican crude oil, from U.S. $55.60 in 2019 to U.S. $35.47 per barrel in 2020; (2) a decrease in the applicable tax rate for 2020, which is 58% for 2020 as compared to 65% for 2019 and (3) the application of a tax credit to the DUC in the amount of Ps. 65.0 billion, which was granted to us by the Mexican Government through a presidential decree dated April 21, 2020. Duties and taxes represented 19.5% and 24.5% of total sales in 2020 and 2019, respectively.

Net Income/Loss

In 2020, we had a net loss of Ps. 509.1 billion from Ps. 953.7 billion in total sales revenues, as compared to a net loss of Ps. 282.1 billion from Ps. 1,402.0 billion in total sales revenues in 2019. This increase in net loss relative to 2019 was primarily explained by:

- a Ps. 448.3 billion decrease in total sales, mainly due to a decrease in the weighted average Mexican export crude oil price, as well as a decrease in the sales volume and average price of gasoline, diesel, fuel oil and jet fuel;
- a Ps. 5.1 billion increase in impairment of wells, pipelines, properties, plant and equipment;
- a Ps. 3.1 billion decrease in other revenues, net;
- a Ps. 5.6 billion increase in administrative expenses and distribution, transportation and sale expenses;
- a Ps. 28.9 billion increase in financing cost;
- a Ps. 12.5 billion decrease in financing income;
- a Ps. 215.8 billion increase in exchange loss, net; and
- a Ps. 2.4 billion decrease in profit sharing in joint ventures, associates and other.

These effects were partially offset by:

- a Ps. 290.3 billion decrease in cost of sales, mainly due to a decrease in purchases of import products;
- a Ps. 6.0 billion decrease in other expenses
- a Ps. 40.3 billion decrease in derivative financial instruments cost, net; and
- a Ps. 158.2 billion decrease in taxes and other duties.

Other Comprehensive Results

In 2020, we had a net loss of Ps. 520.4 billion in other comprehensive results, as compared to a net loss of Ps. 594.1 billion in 2019, primarily due to an increase in the reserve for employee benefits that resulted from the decrease in the discount rate and expected rate of return on plan assets used in the actuarial computation method from 7.5% in 2019 to 7.1% in 2020.

Liquidity and Capital Resources

Overview

During 2021, our liquidity position was adversely affected mainly as a result of an increase in income taxes and duties payable and an increase in short-term debt. The increase in our short-term debt was primarily due to indebtedness incurred to meet our working capital needs and to the reclassification of credits with a current maturity of less than one year from long-term debt to short-term debt. This negative impact to our liquidity position was partially offset by (1) a decrease in the balance of accounts payable to suppliers in 2021 due to payments made by us, (2) an increase in sales to customers, (3) an increase in other accounts receivable, mainly taxes to be recovered and prepaid taxes and (4) an increase in the value of the inventories derived from the increase in oil prices in 2021 compared to 2020.

Our principal use of funds in 2021 was the payment of debt maturities and capital expenditures. We met the requirement to pay such debt maturities, primarily with cash provided by cash flows from borrowings in the amount of Ps. 1,636.2 billion and with cash provided by the Mexican Government's equity contributions to strengthen our financial condition in the amount of Ps. 202.6 billion. See "—Overview—Business Plan" above for more information and a discussion of actions being taken in response to the imbalance of our resources.

Our 2021 budget included Ps. 45.1 billion related to capital contributions for our subsidiary company PTI Infraestructura de Desarrollo, which is developing the construction of the Dos Bocas Refinery. For budgetary purposes, these capital contributions were classified as a financial investment, rather than a capital expenditure. During 2021, works in progress for the construction of the Dos Bocas Refinery, including payments made in advance to contractors, have increased by Ps. 30.7 billion from Ps. 5.2 billion as of December 31, 2020 to Ps. 35.9 billion as of December 31, 2021.

As of December 31, 2021, we owed our suppliers Ps. 264.1 billion as compared to Ps. 282.0 billion as of December 31, 2020. As of December 31, 2021, we have paid the total outstanding balance due to suppliers and contractors as of December 31, 2020 and, as of March 31, 2022, we have paid approximately 38.1% of the total outstanding balance due to suppliers and contractors as of December 31, 2021. The average number of days outstanding of our accounts payable decreased from 263 days as of December 31, 2020 to 183 days as of December 31, 2021. Despite these obligations, we believe net cash flows from our operating and financing activities, together with contributions from the Mexican Government, available cash from our available credit lines and cash and cash equivalents, will be sufficient to meet our working capital, debt service and capital expenditure requirements in 2022. In collaboration with the Mexican Government, we have begun to implement initiatives intended to help us meet our working capital needs, continue to service our debt as it comes due and improve our capital expenditure programs and we are in the process of developing and refining our new long-term business plan, as described above under "—Overview—Business Plan" and as further described below:

The Federal Revenue Law applicable to us as of January 1, 2022, provides for our incurrence of up to Ps. 65.0 billion of net indebtedness through a combination of domestic and international capital markets offerings and borrowings from domestic and international financial institutions. The Federal Revenue Law applicable to us as of January 1, 2021, provides for our incurrence of up to Ps. 42.1 billion of net indebtedness through a combination of domestic and international capital markets offerings and borrowings from domestic and international financial institutions.

We have a substantial amount of debt, including a substantial amount of short-term debt. Due to our heavy tax burden, our cash flow from operations in recent years has not been sufficient to fund our capital expenditures and other expenses and, accordingly, our debt has significantly increased and our working capital has deteriorated. In addition, during 2020, our financial performance was negatively impacted by the significant crude oil price decline beginning in March 2020 as a result of the COVID-19 pandemic. Prices have improved but continue to be volatile. During 2021, the weighted average Mexican crude oil price was U.S. $71.29 per barrel, an increase of U.S. $24.13 per barrel as compared to the 2020 weighted average Mexican crude oil export price of U.S. $47.16 per barrel. Any future decline in international crude oil and natural gas prices will have a similar negative impact on our results of operations and financial condition.

Periods of low oil prices and declining production have also had a negative impact on our ability to generate positive cash flows, which, together with our heavy tax burden, has further exacerbated our ability to fund our capital expenditures and other expenses. Despite the relatively low and fluctuating oil prices and our heavy tax burden, our cash flow from operations in 2021, together with our funds from financing activities, was sufficient to fund our capital expenditures and other expenses. We expect that net cash flows from our operations and financing activities will also be sufficient to meet our working capital requirements, debt service and capital expenditures for 2022.

As of December 31, 2021, our total indebtedness, including accrued interest, was Ps. 2,249.7 billion (U.S. $109.3 billion), in nominal terms, which represents a 0.4% decrease compared to our total indebtedness, including accrued interest, of Ps. 2,258.7 billion (U.S. $109.7 billion) as of December 31, 2020. 36.8% of our existing debt as of December 31, 2021, or Ps. 827.4 billion (U.S. $40.2

billion), is scheduled to mature in the next three years. Our working capital increased from a negative working capital of Ps. 442.6 billion (U.S. $21.4 billion) as of December 31, 2020 to a negative working capital of Ps. 464.3 billion (U.S. $22.6 billion) as of December 31, 2021. Our level of debt may increase further in the short or medium term, as a result of new financing activities or future depreciation of the peso as compared to the U.S. dollar, and may have an adverse effect on our financial condition, results of operations and liquidity position. To service our debt, we have relied and may continue to rely on a combination of cash flow from operations, drawdowns under our available credit facilities and refinancing our existing indebtedness and repurchase transactions. See Note 22 to our consolidated financial statements included herein for more information related to the actions we are taking to improve our financial position.

We currently have a substantial amount of employee benefits liabilities. Benefits to employees were 32.8% of our total liabilities as of December 31, 2021, and any adjustments recorded will affect our net income and/or comprehensive net income during the corresponding period. As of December 31, 2021, our substantial unfunded reserve for retirement pensions and seniority premiums was Ps. 1,384.1 billion. For more information on our Employee Benefits and Benefit Pension Plan, see Note 19 to our consolidated financial statements included herein.

Certain rating agencies have expressed concerns regarding: (1) our heavy tax burden; (2) the total amount of our debt and the ratio of our debt to our proven reserves; (3) the significant increase in our indebtedness over the last several years; (4) our negative free cash flow; (5) the natural decline of certain of our oil fields and lower quality of crude oil; (6) our substantial unfunded reserve for retirement pensions and seniority premiums, which was equal to Ps. 1,384.1 billion (U.S. $67.2 billion) as of December 31, 2021; (7) the persistence of our operating expenses notwithstanding declines in oil prices; (8) our rising per barrel lifting costs; (9) the possibility that our budget for capital expenditures will be insufficient to maintain and exploit reserves, particularly given our high investment needs to maintain production and replenish reserves; (10) the possibility that the Mexican Government will not be able to continue providing the support it has provided in recent years; and (11) the involvement of the Mexican Government in our strategy, financing and management.

Ratings address our creditworthiness and the likelihood of timely payment of our long-term debt securities. Ratings are not a recommendation to purchase, hold or sell securities and may be changed, suspended or withdrawn at any time. Our current ratings and the rating outlooks depend, in part, on economic conditions and other factors that affect credit risk and are outside our control, as well as assessments of the creditworthiness of Mexico. Certain ratings agencies have recently lowered Mexico's credit ratings and their assessment of Mexico's creditworthiness has and may further affect our credit ratings.

Ratings actions related to us that occurred in 2021 and 2022 include the following:

- On March 31, 2021, Fitch Ratings affirmed our long-term foreign and local currency ratings at BB-. The rating outlook is stable. In addition, Fitch simultaneously affirmed our national long-term ratings at A(mex) and national short-term ratings at F1(mex), and has withdrawn all national scale ratings for commercial reasons.
- On April 30, 2021, HR Ratings affirmed our global credit ratings to HRBBB+(G) with a negative outlook and affirmed our local credit rating at HR AAA with a stable outlook.
- On July 27, 2021, Moody's lowered our credit rating for our outstanding notes to A3.mx/Ba3 from A2.mx/Ba2.

Further downgrades of our credit ratings, particularly those below investment grade, may have material adverse consequences on our ability to access the financial markets and/or our cost of financing. In turn, this could significantly harm our ability to meet our existing obligations, financial condition and results of operations. If such constraints occur at a time when our cash flow from operations is less than the resources necessary to meet our debt service obligations, in order to provide additional liquidity to our operations, we could be forced to further reduce our planned capital expenditures, implement further austerity measures and/or utilize alternative financing mechanisms that do not constitute public debt. A reduction in our capital expenditure program could adversely affect our financial condition and results of operations. Additionally, such measures may not be sufficient to permit us to meet our obligations.

Equity Structure and Mexican Government Contributions

Our total equity (deficit) as of December 31, 2021 was negative Ps. 2,170.0 billion, and our total capitalization (long-term debt plus equity) totaled (Ps. 412.6) billion. During 2021, our total deficit decreased from negative Ps. 2,404.7 billion as of December 31, 2020 to negative Ps. 2,170.0 billion as of December 31, 2021, primarily due to our net loss for the year of Ps. 294.8 billion, partially offset by a Ps. 224.6 billion increase in actuarial gains on employee benefits and a Ps. 9.0 billion decrease in total debt. Under the *Ley de Concursos Mercantiles* (Commercial Bankruptcy Law of Mexico), Petróleos Mexicanos and the subsidiary entities cannot be subject to a bankruptcy proceeding. In addition, our current financing agreements do not include financial covenants or events of default that would be triggered as a result of our having negative equity.

During 2021, we received Ps. 316.3 billion in capital contributions from the Mexican Government. See Notes 22 and 28-E to our consolidated financial statements included herein for more information.

The originally scheduled equity contributions from the Mexican Government amounted to Ps. 45.1 billion. Additionally, during 2021, we asked the Ministry of Finance and Credit Public for additional equity contributions through the Ministry of Energy for the construction of the Dos Bocas Refinery. Total equity contributions received from the Mexican Government for the construction of the Dos Bocas Refinery totaled Ps. 113.8 billion.

During 2021, we requested additional contributions from the Mexican Government through the Ministry of Energy, in furtherance of the strategic objective in our Business Plan to strengthen our financial position. As of December 31, 2021, we received a total of Ps. 202.6 billion in contributions made by the Mexican Government for this purpose.

As of December 31, 2021 and 2020, the total amount of contributions in the form of Certificates of Contribution "A" was Ps. 316.3 billion and Ps. 46.3 billion, respectively. As of December 31, 2021 and 2020, the balance of Mexican Government contributions to Petróleos Mexicanos was Ps. 841.3 billion and Ps. 524.9 billion, respectively.

Cash Flows from Operating, Financing and Investing Activities

During 2021, net funds from operating activities totaled Ps. 189.2 billion, as compared to Ps. 65.3 billion in 2020. During 2021, our net cash flows used in investing activities totaled Ps. 262.2 billion, as compared to net cash flows used in investing activities of Ps. 141.1 billion in 2020. Our net cash flows from financing activities totaled Ps. 99.4 billion in 2021, as compared to Ps. 47.2 billion in 2020.

At December 31, 2021, our cash and cash equivalents totaled Ps. 76.5 billion, as compared to Ps. 40.0 billion at December 31, 2020. See Note 9 to our consolidated financial statements included herein for more information about our cash and cash equivalents.

Liquidity Position

We define liquidity as funds available under our lines of credit as well as cash and cash equivalents. The following table summarizes our liquidity position as of December 31, 2020 and 2021.

	As of December 31,	
	2021	2020
	(millions of pesos)	
Borrowing base under lines of credit	Ps. 1,029	Ps. 74,903
Cash and cash equivalents	Ps. 76,506	39,990
Liquidity	Ps. 77,535	Ps. 114,893

The following table summarizes our sources and uses of cash for the years ended December 31, 2020 and 2021.

	For the years ended December 31,	
	2021	2020
	(millions of pesos)	
Net cash flows from operating activities	Ps. 189,235	Ps. 65,294
Net cash flows used in investing activities	(262,236)	(141,140)
Net cash flows from financing activities	99,380	47,225
Effect of change in cash value	10,137	7,989
Net decrease in cash and cash equivalents	Ps. 36,516	Ps. (20,632)

Note: Numbers may not total due to rounding.

Investment Policies

Our Finance and Treasury Department aims to maintain financial resources sufficient to meet our payment commitments and those of the subsidiary entities, as well as a comprehensive, consolidated cash position and related projections in anticipation of such commitments.

Our investment policies attempt to take advantage of favorable market conditions by accessing the most favorable terms offered to us by financial institutions. Investments of financial resources by our Finance and Treasury Department are made in accordance with the following policies:

Investments of Mexican Pesos

In connection with investments in Mexican pesos, we are obligated, during the structuring and development phase of our financial transactions, to observe and comply with the investment guidelines for resources in pesos that were approved by our Financial Resources Committee on July 24, 2017, as modified from time to time. We may only invest in the following:

(a) securities issued or guaranteed by the Mexican Government;

(b) securities issued by *Sociedades Nacionales de Crédito* (National Credit Societies), the balance of which may not exceed 50% of our cash and cash equivalents;

(c) repurchase agreements that use securities issued or guaranteed by the Mexican Government;

(d) time deposits with major financial institutions, the balance of which may not exceed 30% of our cash and cash equivalents; and

(e) shares of mutual funds whose investments are limited to securities issued or guaranteed by the Mexican Government.

In addition to the above limits, demand deposit accounts must be traded with financial institutions that maintain, at a minimum, the following credit ratings as issued by the applicable rating agency:

Domestic scale	Fitch Ratings	S&P	Moody's
Long term	AA(mex)	mxAA	Aa2.mx
Short term	F1(mex)	A-1	Mx-1

Investments of Financial Resources in Dollars

Investments of financial resources in dollars must meet our operational and strategic requirements and must be previously approved by *Banco de México* on a case-by-case basis. Currently, our investments in dollars are limited to operational accounts, short-term money market funds and time deposits. Our dollar investments are managed by *Banco de México*.

Operational Currencies

The main currencies for investing cash and cash equivalents are pesos and dollars. Similarly, we generate revenues from the domestic and international sales of our products in those two currencies and our expenses, including those relating to our debt service, are payable in these two currencies.

Commitments for Capital Expenditures and Sources of Funding

Our capital expenditures for 2021 were Ps. 161,492 million, however, we expect to increase our capital expenditures budget for 2022 up to Ps. 227,091 million. Both figures exclude amounts for non-capitalizable maintenance. For more information regarding the impact of the COVID-19 pandemic on our investment budget, see "Item 4—Information on the Company—History and Development—Capital Expenditures." For an overview of current capital expenditure commitments, see "Item 4—Information on the Company—History and Development—Capital Expenditures" and the "Capital Expenditures and Budget" sections for each business segment in Item 4. The amount of our aggregate capital expenditures commitments for 2021 remains subject to adjustment by the Mexican Government. See "Item 3—Key Information—Risk Factors—Risk Factors Related to our Relationship with the Mexican Government—The Mexican Government controls us and it could limit our ability to satisfy our external debt obligations or could reorganize or transfer us or our assets."

The following table sets forth our total capital expenditures, excluding non-capitalizable maintenance, by segment for the year ended December 31, 2021, and the budget for these expenditures for 2022. Capital expenditure amounts are derived from our budgetary records, which are prepared on a cash basis. Accordingly, these capital expenditure amounts do not correspond to capital expenditure amounts included in our consolidated financial statements prepared in accordance with IFRS. For more information, see "Item 4—History and Development —Capital Expenditures."

	Year ended December 31, 2021		Budget 2022[1]	
		(millions of pesos)[2]		
Exploration and Production	Ps.	134,369	Ps.	208,852
Industrial Transformation		22,416		9,929
Logistics		4,468		7,456
Corporate and other Subsidiaries		239		854
Total	**Ps.**	**161,492**	**Ps.**	**227,091**

Note: Numbers may not total due to rounding.

(1) An adjustment to the original budget was authorized on January 31, 2022. The original budget was published in the Official Gazette of the Federation on November 29, 2021.

(2) Figures are stated in nominal pesos.

Source: Petróleos Mexicanos.

Our current commitments for capital expenditures have fluctuated in recent years as compared to previous years. Based on past experience, we expect to generate sufficient funds for our working capital, capital expenditures and investments through:

- cash flow generated by operations;
- support from the Federal Government;
- the renewal of existing lines of credit and the entering into of new lines of credit from international and local commercial banks;
- the issuance of certificados bursátiles (peso-denominated publicly traded notes) in the Mexican market; and
- other financing activities that do not constitute public debt.

We are not anticipating a net increase in debt securities in the international capital markets for the year 2022, however, if we deem it necessary, we may issue new debt securities in U.S. dollars, Japanese yen, euros, pounds sterling or Swiss francs, among others; these securities may be issued with fixed or floating rates and with maturities of one or more years, including perpetual debt securities, depending on market conditions and funding requirements. We may issue securities in the Mexican domestic market; these securities may vary in tenor, amount and type of interest rate. Commercial bank syndicated loans may be established with single or multiple tranches with varying maturities. Bilateral loans may vary in tenor and range, which may be of one year or more. Finally, we may consider the implementation and development of alternative financing mechanisms that do not constitute public debt. See also "—Financing Activities" below.

Financing Activities

2022 Financing Activities.

During the period from January 1 to April 22, 2022, we participated in the following activities:

- On January 14, 2022, P.M.I. Services North America, as borrower, and Petróleos Mexicanos, as guarantor, entered into a U.S. $500,000,000.00 credit facility maturing in 2023, which bears interest at a floating rate linked to adjusted Secured Overnight Funding Rate (SOFR) plus 275 to 425 basis points.
- On January 21, 2022, Petróleos Mexicanos issued Ps. 4,500,000,000 and U.S. $250,000,000 in aggregate principal amount of promissory notes as follows:
  - Ps. 2,000,000,000, for a term of 270 days, at a rate linked to TIIE plus 228 basis points;
  - Ps. 2,500,000,000, for a term of 360 days, at a rate linked to TIIE plus 238 basis points;
  - U.S. $100,000,000 for a term of 90 days, at a rate linked to LIBOR plus 198 basis points; and
  - U.S. $150,000,000, for a term of 180 days, at a rate linked to LIBOR plus 208 basis points.

- On February 22, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 5,000,000,000 bearing an interest rate linked to TIIE plus 260 basis points, maturing in August 2022.
- On February 25, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of U.S. $11,362,000 bearing an interest rate linked to LIBOR plus 175 basis points, maturing in August 2022.
- On February 25, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 250,000,000, bearing an interest rate linked to TIIE plus 235 basis points, maturing in February 2023.
- On March 16, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 4,000,000,000, bearing an interest rate linked to TIIE plus 220 basis points, maturing in June 2022.
- On March 17, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 4,000,000,000, bearing an interest rate linked to TIIE plus 280 basis points, maturing in September 2022.
- On March 31, 2022, Petróleos Mexicanos entered into a credit line in the amount of U.S. $75,000,000 due January 2023, at a floating rate linked to SOFR plus 245 basis points.
- On March 31, 2022, Petróleos Mexicanos completed the exchange of notes previously issued under Rule 144A and under Regulation S for SEC-registered notes. The following table sets forth, as of March 31, 2022, the principal amount outstanding of the registered debt securities issued by Petróleos Mexicanos, and guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics.
- On April 6, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of U.S. $150,000,000 due June 2022, at a floating rate linked to SOFR plus 270 basis points.
- On April 18, 2022, Petróleos Mexicanos renewed a promissory note for Ps. 4,000,000,000, originally issued in October 2021, bearing interest at a floating rate linked to the 28-day TIIE plus 315 basis points, maturing in January 2023.
- On April 21, 2022, Petróleos Mexicanos renewed a promissory note, originally issued in January 2022, for U.S. $100,000,000, bearing interest at a floating rate linked to 6-month SOFR plus 208 basis points and an adjustment margin of 42.826 basis points, maturing in October 2022.

			Principal amount outstanding
Security	**Issuer**	**Guarantors**	**In thousands of U.S. dollars**
6.875% Notes due 2025	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	901,836
6.700% Notes due 2032	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	6,779,842

As of April 22, 2022, we had U.S. $7,664 million and Ps. 37,000 million in available revolving credit lines in order to provide liquidity, all of which were used as of that date.

Indebtedness

During 2021, our total debt decreased by 0.4%, from Ps. 2,258.7 billion on December 31, 2020 to Ps. 2,249.7 billion at December 31, 2021, primarily due to the financing activities undertaken during this period, as described in Note 16 to our consolidated financial statements included herein.

As of December 31, 2021 and as of the date of this annual report, we were not in default on any of our financing agreements.

The following table sets forth the analysis of our total indebtedness (not including accrued interest) as of December 31, 2021 based on short- and long-term debt and fixed or floating rates:

	In millions of U.S. dollars	
Short-term debt		
Short-term bonds with floating interest rates	U.S. $	634
Lines of credit with variable interest rates established under committed credit facilities with various international commercial banks		13,187
Lines of credit with fixed interest rates		8,281
Total short-term debt[1]	**U.S. $**	**22,102**
Long-term debt		
Fixed rate instruments		
Instruments with fixed annual interest rates ranging from 0.54% to 9.5% and maturities ranging from 2022 to 2060 and perpetual bonds with no maturity date	U.S. $	77,667
Variable rate instruments		
Drawings under lines of credit based on LIBOR and other variable rates with maturities ranging from 2022 to 2031		6,506
Floating rate notes with maturities ranging from 2022 to 2025		1,207
Total variable rate instruments		7,713
Total long-term debt		85,380
Total indebtedness[1]	**U.S. $**	**107,482**

Note: Numbers may not total due to rounding.

(1) Equivalent to Ps. 2,212.4 billion. Excludes U.S. $1,814.0 million (Ps. 37.3 billion) of accrued interest and includes notes payable to contractors.

The table below sets forth our total indebtedness as of December 31 for each of the three years from 2019 to 2021.

Total Indebtedness

	As of December 31,[1]					
	2021		2020		2019	
	(in millions of U.S. dollars)[2]					
Domestic debt in various currencies	U.S. $	15,484	U.S. $	14,490	U.S. $	13,724
External debt in various currencies[3]						
Bonds		75,188		82,856		78,758
Direct loans		13,834		10,559		7,209
Project financing[4]		1,632		1,722		2,184
Capital lease and financing of infrastructure assets[5]		1,323		1,410		1,493
Notes payable to contractors		21		51		108
Total external debt	**U.S. $**	**91,998**	**U.S. $**	**96,598**	**U.S. $**	**89,752**
Total indebtedness	**U.S. $**	**107,482**	**U.S. $**	**111,088**	**U.S. $**	**103,476**

Note: Numbers may not total due to rounding.

(1) Figures do not include accrued interest. Accrued interest was U.S. $1,814.0 million, U.S. $2,138.3 million and U.S. $1,758.9 million at December 31, 2021, 2020 and 2019, respectively.

(2) Indebtedness payable in currencies other than U.S. dollars was first converted into pesos for accounting purposes at the exchange rates set by *Banco de México* and then converted from pesos to U.S. dollars at the following exchange rates: Ps. 20.5835 = $1.00 for 2021, Ps. 19.9487 = $1.00 for 2020 and Ps. 18.8452 = $1.00 for 2019. See Note 16 to our consolidated financial statements included herein.

(3) Indebtedness payable other than in pesos and owed to persons or institutions having their head offices or chief places of business outside of Mexico and payable outside the territory of Mexico.

(4) All credits included in this line are insured or guaranteed by export credit agencies.

(5) Beginning in 2019, this only includes Financing of infrastructure assets and does not include financial leases due to the adoption of IFRS. Financial leases were reclassified to lease liabilities.

Results of Operations by Business Segment

This section presents the results of our operations by business segment, including our central corporate operations and the operations of the consolidated subsidiary companies.

Revenue by Business Segment

The following table sets forth our trade and intersegment net sales revenues by business segment for the fiscal years ended December 31, 2019, 2020 and 2021 as well as the percentage change in sales revenues for those years.

	Year Ended December 31,				
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions of pesos)[1]			%	(%)
Exploration and Production[2]					
Trade sales[5]	Ps. 468,595	Ps. 301,527	Ps. 409,533	55.4	(26.4)
Intersegment sales	460,573	242,455	333,736	90.0	(27.4)
Total net sales	929,168	543,982	743,269	70.8	(26.8)
Industrial Transformation[3][4]					
Total trade sales	705,135	479,437	800,891	47.1	(40.1)
Total intersegment sales	186,494	97,729	128,449	90.8	(23.9)
Total net sales	891,629	577,166	929,340	54.5	(37.9)
Logistics					
Trade sales[5]	2,949	4,099	4,664	(28.1)	(12.1)
Intersegment sales	84,953	80,575	88,605	5.4	(9.1)
Total net sales	87,902	84,674	93,269	3.8	(9.2)
Trading Companies					
Trade sales[5]	305,851	160,016	175,577	91.1	(8.9)
Intersegment sales	400,866	280,924	484,139	42.7	(42.0)
Total net sales	706,717	440,940	659,716	60.3	(33.2)
Corporate and other subsidiary companies					
Trade sales[5]	13,099	8,584	11,306	52.6	(24.1)
Intersegment sales and eliminations	(1,132,886)	(701,683)	(1,034,928)	61.5	(32.2)
Total net sales	(1,119,787)	(693,099)	(1,023,622)	61.6	(32.3)
Total net sales	1,495,629	953,663	1,401,971	56.8	(32.0)

Note: Numbers may not total due to rounding.

(1) Figures for 2019, 2020 and 2021 are stated in nominal pesos.

(2) Prior to July 1, 2019, Pemex Drilling and Services operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Drilling and Services was merged into Pemex Exploration and Production. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Exploration and Production segment. See "Item 4—Information on the Company—History and Development."

(3) Prior to July 1, 2019, Pemex Ethylene operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Ethylene was merged into Pemex Industrial Transformation. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment. See "Item 4—Information on the Company—History and Development."

(4) On January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation. For comparison purposes, all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment.

(5) Trade sales represent sales to external customers. See "Item 5—Operating and Financial Review and Prospects—Selected Financial Data."

Source: PEMEX's consolidated financial statements, prepared in accordance with IFRS.

Income by Business Segment

The following table sets forth our net income (loss) by business segment for each year in the three-year period ended December 31, 2021, as well as the percentage change in income for the years 2019 to 2021.

	Year Ended December 31,			2021 vs. 2020	2020 vs. 2019
	2021	2020	2019		
	(in millions of pesos)[1]			(%)	(%)
Business Segment					
Exploration and Production[2]	Ps. (39,898)	Ps. (216,922)	Ps. (240,844)	(81.6)	(9.9)
Industrial Transformation[3][4][5]	(219,842)	(238,087)	(79,772)	(7.7)	198.5
Logistics	15,474	23,731	87,815	(34.8)	(73.0)
Trading Companies	829	(682)	5,186	(221.6)	(113.2)
Corporate and other subsidiary companies[5]	(51,339)	(77,091)	(54,496)	(33.4)	41.5
Total net income (loss)	Ps. (294,776)	Ps. (509,051)	Ps. (282,111)	(42.1)	80.4

Note: Numbers may not total due to rounding.

(1) Figures are stated in nominal pesos. See "Item 5—Operating and Financial Review and Prospects—Selected Financial Data."

(2) Prior to July 1, 2019, Pemex Drilling and Services operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Drilling and Services was merged into Pemex Exploration and Production. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Exploration and Production segment. See "Item 4—Information on the Company—History and Development."

(3) Prior to July 1, 2019, Pemex Ethylene operated as an additional productive state-owned subsidiary. As of July 1, 2019, Pemex Ethylene was merged into Pemex Industrial Transformation. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment. See "Item 4—Information on the Company—History and Development."

(4) On January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment.

(5) Includes intersegment eliminations.

Source: PEMEX's consolidated financial statements, prepared in accordance with IFRS.

2021 compared to 2020

We present below the results of our operations by business segment. For more information on our operating segments, see "Item 4— Information on the Company—History and Development—Corporate Structure" and Note 1 to our consolidated financial statements included herein. For a detailed description of the financial results of each segment, see Note 6 to our consolidated financial statements included herein.

Exploration and Production

In 2021, total sales increased by 70.8%, primarily due to the increase in crude oil export prices. The weighted average price of crude oil sold by our exploration and production segment for export was U.S. $35.47 in 2020 compared to U.S. $65.85 in 2021. Net loss related to exploration and production activities decreased by Ps. 177,024 million, from a Ps. 216,922 million loss in 2020 to a Ps. 39,898 million loss in 2021, primarily due to an increase in sales.

Industrial Transformation

In 2021, total sales related to industrial transformation activities increased by 54.4%, from Ps. 577,166 million in 2020 to Ps. 891,629 million in 2021, primarily due to an increase in the average sales prices of petroleum products. In 2021, our net loss related to industrial transformation activities was Ps. 219,842 million, a decrease in net loss of Ps. 18,245 million as compared to the Ps. 238,087 million net loss recognized in 2020. The decrease in loss was due to an increase in domestic sales.

Logistics

In 2021, total sales related to the logistics segment increased by 3.8%, from Ps. 84,674 million in 2020 to Ps. 87,902 million in 2021, primarily due to an increase in the services provided to Pemex Industrial Transformation. In 2021, our net income related to logistics activities was Ps. 15,474 million, a decrease of Ps. 8,257 million in comparison to our net income of Ps. 23,731 million in 2020. This reduction in net income was primarily the result of an increase in demand of pipeline transportation services, a reduction in cost of sales and an increase in financing income.

Trading Companies

In 2021, total sales relating to the Trading Companies' exports of crude oil and petroleum products to third parties (including services income) increased by 91.1%, from Ps. 160,016 million in 2020 to Ps. 305,851 million in 2021, primarily as a result of an increase in average crude oil export prices from U.S. $35.47 in 2020 to U.S. $65.85 in 2021. In 2021, net income related to the Trading Companies increased Ps. 1,511 million, from a net loss of Ps. 682 million in 2020 to a net income of Ps. 829 million in 2021, primarily as a result of an increase in sales.

Corporate and Other Subsidiary Companies

In 2021, the total sales relating to corporate and other subsidiary companies after inter-company eliminations decreased from Ps. 693,099 million in 2020 to Ps. 1,119,787 million in 2021, primarily due to an increase in total intercompany sales. Net loss related to corporate and other subsidiary companies after inter-company eliminations decreased 33.4%, from a net loss of Ps. 77,091 million in 2020 to a net loss of Ps. 51,339 million in 2021, primarily due to favorable results from subsidiary companies.

2020 compared to 2019

For a detailed description of the financial results of each operating segment, see Note 6 to our consolidated financial statements included herein and "Item 5—Operating and Financial Review and Prospects—Results of Operations by Business Segment" of our Form 20-F, as filed in May 2021.

Research and Development

Our research and development activities are focused on developing the Mexican energy sector through advancing products and solutions that are intended to be high quality, high performance and technologically efficient. These research and development activities are focused on the development of technologies not available in the international market and on the development of specialized human resources in the oil industry.

Created in 1965, the Mexican Petroleum Institute ("IMP") is a public research organization under SENER that is administered by the Mexican Government and has its own legal entity and resources, as well as technical, operative and administrative autonomy with respect to its decisions. The IMP is the only public center for research in Mexico that has carried out research, technological development, innovation, process and products improvement, as well as offered high value technological services focused on process optimization in hydrocarbon exploration and production, industrial transformation, and national and international commercialization.

We coordinate closely with IMP for the development of competitive and valuable solutions through technology transfer, technological services, development projects, talent development and specialized training.

We continue to support different research projects. For one project, we have partnered with the Technologies Center of Exploration and Production ("CTEP") to analyze the role of qualified human resources in assimilating, generating and qualifying technologies for the efficient design, development and operation of oilfields. Another of these projects is the implementation of networks of oceanographic observations (physical, geochemical, ecological) for the generation of scenarios in the event of a possible hydrocarbon spill in the Gulf of Mexico with *Centro de Investigación Científica y de Educación Superior de Ensenada* (Ensenada Center for Scientific Research and Higher Education or "CICESE").

Finally, we coordinate with other entities outside of Mexico. For example we are currently arranging Memorandum of Understandings with SINOPEC, ECOPETROL, INPEX and JOGMEC.

Item 6. Directors, Senior Management and Employees

Under the Petróleos Mexicanos Law, we are governed by a ten-member Board of Directors composed as follows:

- the Secretary of Energy, who serves as the Chairperson and has the right to cast a tie-breaking vote;

- the Secretary of Finance and Public Credit;
- three Mexican Government representatives, who are appointed by the President of Mexico; and
- five independent members, who are appointed by the President of Mexico, subject to ratification by the Senate. Independent members perform their duties on a part-time basis, are not public officials (i.e., individuals holding federal, state or municipal government positions in Mexico) and have not been employed by Petróleos Mexicanos or any of the subsidiary entities during the two years prior to their appointment.

The Petróleos Mexicanos Law authorizes only the Secretary of Energy and the Secretary of Finance and Public Credit to designate an alternate to serve in his or her place, provided that the alternate is a public official at the undersecretary level, at minimum. This alternate may attend meetings of the Board of Directors of Petróleos Mexicanos and otherwise assume the duties of the director, except that the Chairperson's designated alternate may not cast a tie-breaking vote. In addition, any ministry-level secretary serving as a member of the Board of Directors of Petróleos Mexicanos may designate an alternate to attend meetings on his or her behalf, provided that such alternate is a public official at the undersecretary level, at minimum.

Under the Petróleos Mexicanos Law, all public officials serving as members of the Board of Directors of Petróleos Mexicanos are required to act impartially and for the benefit and in the best interests of Petróleos Mexicanos, separating at all times the interests of the ministry or governmental entity for which they work from their duties as members of the Board of Directors.

The five independent members are appointed to staggered five-year terms, and may be appointed for an additional term of the same length. The remaining members of our Board of Directors are not appointed for a specific term.

Under the Petróleos Mexicanos Law, each of the boards of directors of our subsidiary entities will consist of not less than five and no more than seven members. The majority of the members of each of the board of directors shall be appointed by and represent the Board of Directors of Petróleos Mexicanos. The Ministry of Energy and the Ministry of Finance and Public Credit may also appoint members to each board of directors of the subsidiary entities, subject to approval by the Board of Directors of Petróleos Mexicanos.

The structure, organizational basis and functions of the administrative units of Petróleos Mexicanos and each of the subsidiary entities are established in the *Estatuto Orgánico* (Organic Statute) approved by the Board of Directors of each entity.

The following tables set forth certain information with respect to directors and executive officers of Petróleos Mexicanos and each of the subsidiary entities as of April 22, 2022:

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
Ms. Norma Rocío Nahle García	Chairperson of the Board of Directors of Petróleos Mexicanos and Secretary of Energy *Born*: 1964 *Business experience*: Senator of the LXIV Legislature; Federal Deputy of the LXIII Legislature; Advisor to the Energy Commission of the Chamber of Deputies of the LIX; and LXI Legislatures and of the Senate of the LXII Legislature. *Other board memberships*: CFE (Chairperson); Centro Nacional de Control de Energía (Chairperson); CENAGAS (Chairperson); Instituto Nacional de Investigaciones Nucleares (Chairperson); IMP (Chairperson); and Fondo Mexicano del Petróleo. *Family relations*: None.	2018

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
Mr. Miguel Ángel Maciel Torres	Alternate Board Member of Petróleos Mexicanos and Undersecretary of Hydrocarbons of the Ministry of Energy *Born*: 1960 *Business experience*: Deputy Director of Businesses Development for Exploration and Production of Petróleos Mexicanos; Deputy Director of Alliances Management of Pemex Exploration and Production; and Deputy Director of Field Development of Pemex Exploration and Production. *Other board memberships*: CFE (Alternate); Centro Nacional de Control de Energía (Alternate); CENAGAS (Alternate); Instituto Nacional de Electricidad y Energías Limpias (Chairperson); and Instituto Nacional de Investigaciones Nucleares (Alternate); and IMP (Alternate). *Family relations*: None.	2019
Mr. Rogelio Eduardo Ramírez de la O	Board Member of Petróleos Mexicanos and Secretary of Finance and Public Credit *Born*: 1948 *Business experience*: Board Member of Peña Verde, S.A.B.; Independent Board Member of Reaseguradora Patria, S.A.; and Independent Board Member of Grupo Modelo, S.A. de C.V. *Other board memberships*: Centro de Investigación y Seguridad Nacional; Casa de Moneda de México (Chairperson); Comisión Nacional para la Protección y Defensa de los Usuarios de Servicios Financieros (CONDUSEF) (Chairperson); Financiera Nacional de Desarrollo Agropecuario, Rural, Forestal y Pesquero (Chairperson); Instituto para la Protección al Ahorro Bancario (Chairperson); Lotería Nacional para la Asistencia Pública (Chairperson); Pronósticos para la Asistencia Pública (Chairperson); Servicio de Administración y Enajenación de Bienes (SAE) (Chairperson); Agroasemex, S.A. (Chairperson); Banco del Bienestar, S.N.C. (Chairperson); Banco Nacional de Comercio Exterior, S.N.C. (BANCOMEXT) (Chairperson); Banco Nacional de Obras y Servicios Públicos, S.N.C. (BANOBRAS) (Chairperson); Banco Nacional del Ejército, Fuerza Aérea y Armada, S.N.C. (BANJERCITO) (Chairperson); Nacional Financiera, S.N.C. (NAFIN) (Chairperson); Seguros de Crédito a la Vivienda SHF, S.A. de C.V. (SCV) (Chairperson); Sociedad Hipotecaria Federal, S.N.C. (SHF) (Chairperson); Fondo de Operación y Financiamiento Bancario a la Vivienda; CNBV; Comisión Nacional de Seguros y Fianzas (CNSF); Comisión Nacional del Sistema de Ahorro para el Retiro (CONSAR) (Chairperson); Servicio de Administración Tributaria (Tax Administration Service, or the SAT) (Chairperson); Instituto Nacional de las Personas Adultas Mayores; Consejo Nacional para el Desarrollo y la Inclusión de las Personas con Discapacidad; Coordinación Nacional de PROSPERA, Programa de Inclusión Social; Comisión Nacional Forestal; Instituto Mexicano de Tecnología del Agua; Instituto Nacional de Ecología y Cambio Climático (INECC); Comisión Nacional del Agua; ASEA; Aeropuertos y	2021

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
	Servicios Auxiliares; Caminos y Puentes Federales de Ingresos y Servicios Conexos (CAPUFE); Servicio Postal Mexicano (SEPOMEX); Telecomunicaciones de México (TELECOMM); Consejo Nacional de Fomento Educativo; Fondo de Cultura Económica; Instituto Mexicano de la Radio; Instituto Nacional para la Educación de los Adultos; Fideicomiso de los Sistemas Normalizado de Competencia Laboral y de Certificación de Competencia Laboral; Instituto del Fondo Nacional para el Consumo de los Trabajadores (INFONACOT); Instituto Nacional de Ciencias Penales; Comisión Nacional para el Desarrollo de los Pueblos Indígenas; Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE); Instituto del Fondo Nacional de la Vivienda para los Trabajadores (INFONAVIT); Instituto Mexicano del Seguro Social (IMSS); Instituto Nacional de las Mujeres (INMUJERES); CFE; Comisión de Política Gubernamental en materia de Derechos Humanos; Comisión Intersecretarial de Cambio Climático; Comisión Intersecretarial para el Desarrollo del Gobierno Electrónico; Comisión Intersecretarial de Gasto Público, Financiamiento y Desincorporación; Comisión Intersecretarial para el Conocimiento y Uso de la Biodiversidad; Comisión Intersecretarial para el Otorgamiento de Concesiones y Permisos previstos en la Ley de Aeropuertos; Comisión Intersecretarial para la Instrumentación del Programa de Integración del Registro Nacional de Población; Comisión Intersecretarial para la Prevención y Combate a la Economía Ilegal; Consejo Nacional de Educación para la Vida y el Trabajo; Consejo Nacional para las Comunidades Mexicanas en el Exterior; Comisión Coordinadora para la Negociación de Precios de Medicamentos y Otros Insumos para la Salud; Comisión Intersecretarial de Compras y Obras de la Administración Pública Federal a la Micro, Pequeña y Mediana Empresa; Comisión Intersecretarial de Bioseguridad y Organismos Genéticamente Modificados; Comisión Intersecretarial de Desarrollo Social; Comisión Intersecretarial para el Desarrollo de los Bioenergéticos; Comisión Intersecretarial para la Atención de Sequías e Inundaciones; Comisión Intersecretarial para la Instrumentación de la Cruzada contra el Hambre; Comisión Intersecretarial para la Prevención Social de la Violencia y la Delincuencia; Comisión de Cambios (Chairperson); Comisión Nacional de Inversiones Extranjeras; Comisión Nacional de Inversiones Extranjeras; Comisión Ambiental Metropolitana; Consejo de Estabilidad del Sistema Financiero; Consejo de Seguridad Nacional; Technical Committee of the Fondo Mexicano del Petróleo para la Estabilización y el Desarrollo; Consejo Nacional para la Competitividad de la Micro, Pequeña y Mediana Empresa; Consejo Nacional para la Prevención y Control de las	

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
	Enfermedades Crónicas No Transmisibles; Comité Técnico Especializado en Información sobre Discapacidad del Sistema Nacional de Información Estadística y Geográfica; Comité Nacional de Productividad; Comité Nacional de Seguridad Aeroportuaria; and Consejo Nacional de Protección Civil. *Family relations*: None.	
Mr. Gabriel Yorio González	Alternate Board Member of Petróleos Mexicanos and Undersecretary of Finance and Public Credit of the Ministry of Finance and Public Credit *Born*: 1976 *Business experience*: Head of the Public Credit Unit of the Ministry of Finance and Public Credit; Public Sector Specialist at the World Bank; and Financial Management Specialist at the World Bank. *Other board memberships*: Agencia Mexicana de Cooperación Internacional para el Desarrollo; Casa de Moneda de México; CONDUSEF (Alternate); Financiera Nacional de Desarrollo Agropecuario, Rural, Forestal y Pesquero; Instituto para la Protección al Ahorro Bancario (Alternate); Lotería Nacional para la Asistencia Pública (Alternate); Pronósticos para la Asistencia Pública (Alternate); SAE; Agroasemex, S.A.; Banco del Bienestar, S.N.C.; BANCOMEXT; BANOBRAS; BANJERCITO; NAFIN; SCV; SHF; Fondo de Capitalización e Inversión del Sector Rural; Fondo de Garantía y Fomento para la Agricultura, Ganadería y Avicultura; Fondo de Garantía y Fomento para Actividades Pesqueras; Fondo de Operación y Financiamiento Bancario a la Vivienda; CNBV; CNSF; CONSAR; SAT (Alternate); CENAGAS; Centro Nacional de Control de la Energía; ISSSTE; CFE (Alternate); Comisión de Fomento del as Actividades de las Organizaciones de la Sociedad Civil; Comisión Intersecretarial para el Desarrollo de los Bioenergéticos; Comisión Intersecretarial para la Transición Digital; Comisión de Cambios; Comisión Permanente de Servicios de Salud a la Comunidad; Comisión de Comercio Exterior; Comisión Tripartita encargada de la Evaluación y Seguimiento de las Disposiciones establecidas en la Ley de Ayuda Alimentaria para los Trabajadores; Comité Interinstitucional para la Aplicación del Estímulo Fiscal a Proyectos de Inversión en la Producción Teatral Nacional; Comité Interinstitucional para la Aplicación del Estímulo Fiscal a Proyectos de Inversión en la Producción Cinematográfica Nacional; Comisión Nacional de Inversiones Extranjeras (Alternate); Consejo de Estabilidad del Sistema Financiero; Consejo de Salubridad General; Consejo Nacional de Armonización Contable; Technical Committee of the Fondo Mexicano del Petróleo para la Estabilización y el Desarrollo (Alternate); Consejo Consultivo Nacional del Sistema Nacional de Información Estadística y Geográfica; Comité Nacional de Productividad (Alternate); and Comisión to which Article 15 of the Ley de Ayuda Alimentaria para los Trabajadores (Law of Food Assistance for Workers). *Family relations*: None.	2019

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
Ms. Tatiana Clouthier Carrillo	Board Member of Petróleos Mexicanos and Secretary of Economy *Born*: 1964 *Business experience*: Federal Deputy of the LXIV Legislature; Coordinator of the presidential campaign of Mr. Andrés Manuel López Obrador; and Director of Universidad Metropolitana de Monterrey. *Other board memberships*: Aeropuertos y Servicios Auxiliares; Banco del Bienestar, S.N.C.; BANCOMEXT; Caminos y Puentes Federales y Servicios Conexos; Centro de Investigación y Docencia Económicas, A.C.; Centro Nacional de Metrología (Chairperson); CFE; Comisión Intersecretarial de Bioseguridad de los Organismos Geneticamente Modificados; Comisión Intersecretarial de Cambio Climático; Comisión Intersecretarial de Compras y Obras de la Administración Pública Federal (Chairperson); Comisión Intersecretarial de Desarrollo Social; Comisión Intersecretarial de Gasto Publico, Financiamiento y Desincorporación; Comisión Intersecretarial de Precios y Tarifas de los Bienes y Servicios de la Administración Pública Federal; Comisión Intersecretarial de Vivienda; Comisión Intersecretarial de Zonas Económicas Especiales; Comisión Intersecretarial para el Conocimiento y Uso de la Biodiversidad; Comisión Intersecretarial para Desarrollo del Gobierno Electrónico; Comisión Intersecretarial para el Desarrollo de los Bioenergéticos; Comisión Intersecretarial para el Desarrollo Rural Sustentable; Comisión Intersecretarial para el Manejo Sustentable de Mares y Costas; Comisión Intersecretarial para la Atención de Sequias e lnundaciones; Comisión Intersecretarial para la Prevención Social de la Violencia y de la Delincuencia; Comisión Intersecretarial para la Prevención y Combate a la Economía Ilegal; ; Comisión Intersecretarial para la Prevención y Erradicación del Trabajo lnfantil y la Protección de Adolescentes Trabajadores en Edad Permitida en Mexico; Comisión Intersecretarial para la Reinserción Social y Servicios Postpenales; Comisión Nacional de Infraestructura de la Calidad (Chairperson); Comisión Nacional de Inversiones Extranjeras (Chairperson); Comisión Nacional de Vivienda; Comisión Nacional del Agua; Comisión Nacional Forestal; Comité de Control y Desempeño Institucional de la Secretaria de Economía (Chairperson); Comité lntersectorial para la lnnovación (Chairperson); Consejo de Salubridad General; Consejo Nacional contra las Adicciones; Consejo Nacional de Infraestructura; Consejo Nacional de Mejora Regulatoria (Chairperson); Consejo Nacional de Ordenamiento Territorial y Desarrollo Urbano; Consejo Nacional para la Competitividad de la Micro, Pequeña y Mediana Empresa (Chairperson); Comisión Nacional para el Desarrollo de los Pueblos Indígenas; Consejo de Normalización y Certificación de Competencia Laboral; Consejo Nacional de Protección Civil; Consejo Nacional para las Comunidades Mexicanas en el Exterior; Consejo Mexicano para el Desarrollo Rural Sustentable; DICONSA, S.A. de C.V.; Exportadora de Sal, S.A. de C.V. (Chairperson); Fideicomiso de Fomento	2021

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
	Minero (Chairperson); Fideicomiso e-México; Fideicomiso para Promover el Acceso al Financiamiento de MIPYMES y Emprendedores (Chairperson); Instituto del Fondo Nacional de la Vivienda para los Trabajadores; Instituto del Fondo Nacional para el Consumo de los Trabajadores; Instituto Mexicano de la Juventud; Instituto Mexicano de la Propiedad Industrial (President); Instituto Mexicano de la Radio; Instituto Nacional de las Mujeres; LICONSA, S.A. de C.V.; NAFIN; Seguridad Alimentaria Mexicana; Servicio Geológico Mexicano; Servicio Nacional de Capacitación y Asistencia Técnica Rural; Servicio Postal Mexicano; and Telecomunicaciones de Mexico. *Family relations*: None.	
Mr. Héctor Guerrero Herrera	Alternate Board Member of Petróleos Mexicanos and Undersecretary of Industry and Trade of the Ministry of Economy *Born*: 1954 *Business experience*: General Director of Madero Equipo de Ordeñas, S.A. de C.V.; General Director of Intermex, S.A. de C.V.; and Partner Director of POSEAC Consultores, S.C. *Other board memberships*: Comisión Nacional del Agua (Alternate); Consejo Consultivo de Turismo (Alternate); Consejo Nacional de Ordenamiento Territorial y Desarrollo Urbano (Alternate); and Consejo Consultivo Nacional del Sistema Nacional de Información Estadística y Geografía (Alternate). *Family relations*: None.	2021
Ms. María Luisa Albores González	Board Member of Petróleos Mexicanos and Secretary of Environment and Natural Resources *Born*: 1976 *Business experience*: Secretary of Welfare; and Advisor of Regional Agricultural and Livestock Cooperative Company Tosepan Titataniske. *Family relations*: None.	2020

Name	Position with Petróleos Mexicanos	Year Appointed
Mr. Iván Rico López	Alternate Board Member of Petróleos Mexicanos and Undersecretary of Planning and Environmental Policy of the Secretary of Environment and Natural Resources *Born*: 1984 *Business experience*: Head of the International Affairs Coordination Unit of the Secretary of Environment and Natural Resources; General Director of the Interinstitutional Correlation of the Ministry of Welfare; and Assistant of Political Affairs and Press of the Embassy of Mexico in Nicaragua. *Other board memberships*: Comisión Nacional del Agua (Alternate Chairperson); Consejo Técnico de la Agenda 2030 para el Desarrollo Sostenible (Alternate Chairperson); Comité Mixto del Fondo Forestal Mexicano; Instituto Nacional de Ecología y Cambio Climático (Alternate Chairperson); Comisión de Comercio Exterior; Comisión Intersecretarial para la Atención de Sequías e Inundaciones (Alternate Chairperson); Instituto Nacional de los Pueblos Indígenas (Alternate); Consejo Nacional de Ciencia y Tecnología; Consejo Consultivo Nacional del Sistema de Información, Estadística y Geografía; Sistema Nacional de Información Geográfica, Medio Ambiente, Ordenamiento Territorial y Urbano; Comisión Nacional de Vivienda; Fideicomiso de Río Sonora (Chairperson); Fondo Nacional de Fomento al Turismo; Comisión Intersecretarial de Desarrollo Sustentable (Alternate); Comisión Intersecretarial de Desarrollo Social (Alternate); ProMéxico; Comisión Nacional Forestal (Alternate); Consejo Consultivo Científico- Cultural of the Programa de acompañamiento para el desarrollo sustentable en la ruta del Tren Maya: fortalecimiento y salvaguarda del patrimonio cultural y natural; and Comisión Presidencial encargada de la Coordinación Interinstitucional del Archipiélago Islas Marías. *Family relations*: None.	2022

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
Mr. Manuel Bartlett Díaz	Board Member of Petróleos Mexicanos and General Director of CFE *Born*: 1936 *Business experience*: Senator of the LXIII and LXII Legislatures; and Governor of the State of Puebla. *Other board memberships*: CFE Generación I (Chairperson); CFE Generación II (Chairperson); CFE Generación III (Chairperson); CFE Generación IV (Chairperson); CFE Generación V (Chairperson); CFE Generación VI (Chairperson); CFE Transmisión (Chairperson); CFE Distribución (Chairperson); CFE Suministrador de Servicios Básicos (Chairperson); CFE Telecomunicaciones e Internet Para Todos (Chairperson); CFE Calificados, S.A. de C.V. (Chairperson); CFEnergía, S.A. de C.V. (Chairperson); and CFE International, LLC. (Chairperson). *Family relations*: None.	2018
Mr. Juan José Paullada Figueroa	Independent Board Member of Petróleos Mexicanos *Born*: 1951 *Business experience*: Partner Director of Paullada, Guevara y Asociados, S.C.; Fiscal Attorney Officer of the Federation; and General Director of the Fideicomiso Liquidador de Instituciones y Organizaciones Auxiliares de Crédito. *Other board memberships*: Grupo Machado (Independent Board Member). *Family relations*: None.	2019
Mr. José Eduardo Beltrán Hernández	Independent Board Member of Petróleos Mexicanos *Born*: 1942 *Business experience*: President of the Political and Social Sciences of the Academia Mexicana de Ciencias, Tecnologías y Humanidades; Federal Deputy; President of the Energy Commission of the LIII Legislature of the Chamber of Deputies; and General Secretary of Government of the State of Tabasco. *Family relations*: None.	2019
Ms. Laura Itzel Castillo Juárez	Independent Board Member of Petróleos Mexicanos *Born*: 1957 *Business experience*: General Director of Sistema de Movilidad 1 of the Government of Mexico City; Federal Deputy of the LXI Legislature; and Secretary of Urban Development and Housing. *Other board memberships*: Director of Fundación Heberto Castillo Martínez, A.C. *Family relations*: None.	2020

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
Mr. Humberto Domingo Mayans Canabal	Independent Board Member of Petróleos Mexicanos *Born*: 1949 *Business experience*: Senator of the LXII and LXIII Legislatures; Coordinator for Migration Affairs in the Southern Border of the Ministry of the Interior; and General Secretary of Government of the State of Tabasco. *Family relations*: None.	2019
Mr. Lorenzo Mauricio Meyer Falcón	Independent Board Member of Petróleos Mexicanos *Born:* 1978 *Business experience:* Founding member for Mexico and Latin America of the United Nations: International Centers of Excellence on Sustainable Resource Management; Consultant of Prodener MX, S.A.P.I. de C.V.; and General Director of Liaison of CRE. *Family relations:* None	2022
Mr. Octavio Romero Oropeza	Chief Executive Officer/General Director *Born*: 1959 *Business experience*: President of the Movimiento de Regeneración Nacional; Political State Council of Tabasco; Head Official of the Government of Mexico City; and Federal Deputy of the LVI Legislature. *Other board memberships*: CFE. *Family relations*: None.	2018
Mr. Antonio López Velarde Loera	Acting Chief Financial Officer /Acting Corporate Director of Finance *Born*: 1976 *Business experience*: Associate Managing Director of Financial Risk Management of Petróleos Mexicanos; Deputy Manager of Capital Markets and Derivatives of Petróleos Mexicanos; and Deputy Manager of Derivative Transactions of Petróleos Mexicanos. *Family relations*: None.	2021
Mr. Marcos Manuel Herrería Alamina	Corporate Director of Management and Services *Born*: 1967 *Business experience*: General Director of Management of the Ministry of Finance of Mexico City; Private Secretary of the Head Official of the Government of Mexico City; and Administrative Coordinator of the Procuraduría General de Justicia of Mexico City. *Family relations*: None.	2019

Petróleos Mexicanos—Directors and Executive Officers

Name	Position with Petróleos Mexicanos	Year Appointed
Mr. Víctor Manuel Navarro Cervantes	Corporate Director of Planning, Coordination and Performance *Born*: 1963 *Business experience*: Managing Director of Urvian Servicios de Consultoría para la Administración Pública; General Coordinator of Administrative Modernization of the Administrative Office of the Government of Mexico City; and General Director of Management and Finance of the Sistema de Transporte Colectivo of Mexico City. *Family relations*: None.	2018
Ms. Luz María Zarza Delgado	Legal Director *Born*: 1968 *Business experience*: Deputy Director of Legal Consulting of Petróleos Mexicanos; General Counsel of the Universidad Autónoma del Estado de México; Legal Counsel of the State of Mexico; and Magistrate of the Electoral Court of the State of Mexico. *Family relations*: None.	2019
Mr. Juan Torres Gurrola	Head of Internal Auditing *Born*: 1957 *Business experience*: Head of the Internal Control Body of the Presidency of Mexico; Advisor of the Finance Secretary of the National Executive Committee of the Movimiento de Regeneración Nacional; and Advisor of the Human Resources Deputy Office of the Ministry of Social Development of the Mexico City Government. *Family relations*: None.	2022

Pemex Exploration and Production—Directors and Executive Officers

Name	Position with Pemex Exploration and Production	Year Appointed
Mr. Octavio Romero Oropeza	Chairperson of the Board of Pemex Exploration and Production (refer to Petróleos Mexicanos)	2018
Mr. Jorge Luis Basaldúa Ramos	Board Member of Pemex Exploration and Production and Acting General Director of Pemex Industrial Transformation *Born*: 1964 *Business experience*: Undersecretary of Human Capital and Management in the Government of Mexico City; General Manager in the Social Security Fund of the Preventive Police of Mexico City; and General Director of the Social Security Fund of the Auxiliary Police of Mexico City. *Other board memberships*: Administración Portuaria Integral Dos Bocas; and IMP (Alternate). *Family relations*: None.	2020
Mr. Javier Núñez López	Board Member of Pemex Exploration and Production and Deputy Director of Supply of Petróleos Mexicanos *Born*: 1965 *Business experience*: Acting Operative Director of Procurement and Supply of Petróleos Mexicanos; Director of Management of Xalapa, Veracruz; Chief of Staff of the LXII Legislature of the State of Tabasco Congress; and Director of Management of the Secretaría de Salud of the State of Tabasco. *Family relations*: None.	2019
Mr. Antonio López Velarde Loera	Board Member of Pemex Exploration and Production (refer to Petróleos Mexicanos)	2021
Mr. Jorge Alberto Arévalo Villagrán	Board Member of Pemex Exploration and Production and General Director of Exploration and Extraction of Hydrocarbons of the Ministry of Energy *Born*: 1961 *Business experience*: Professor in Engineering of Universidad Nacional Autónoma de México; Technical Director of Special Projects of Soluciones en Software Especializado Némesis, S.A. de C.V.; and Associate Managing Director of Strategies and Plans of Pemex Exploration and Production. *Other board memberships*: Fondos Sectoriales CONACYT-Secretaría de Energía-Hidrocarburos; and Instituto Nacional de Investigaciones Nucleares (Alternate). *Family relations*: None.	2018
Mr. Gabriel Yorio González	Board Member of Pemex Exploration and Production and Acting Undersecretary of Income of the Ministry of Finance and Public Credit (refer to Petróleos Mexicanos)	2019

Pemex Exploration and Production—Directors and Executive Officers

Name	Position with Pemex Exploration and Production	Year Appointed
Mr. Ángel Cid Munguía	Board Member of Pemex Exploration and Production and General Director of Pemex Exploration and Production *Born*: 1961 *Business experience*: Executive Coordinator of the General Director's Office of Pemex Exploration and Production; Manager of Specialized Technical Resources of Pemex Exploration and Production; and Administrator of Activo Integral de Producción Bloque S03 of Pemex Exploration and Production. *Family relations*: None.	2021

Pemex Industrial Transformation—Directors and Executive Officers

Name	Position with Pemex Industrial Transformation	Year Appointed
Mr. Octavio Romero Oropeza	Chairperson of the Board of Pemex Industrial Transformation (refer to Petróleos Mexicanos)	2018
Mr. Marcos Manuel Herrería Alamina	Board Member of Pemex Industrial Transformation (refer to Petróleos Mexicanos)	2019
Mr. Víctor David Palacios Gutiérrez	Board Member of Pemex Industrial Transformation and General Director of Natural Gas and Petrochemicals of the Ministry of Energy *Born*: 1954 *Business experience*: Acting Associate Managing Director of Gas Processing Complex La Cangrejera of Pemex Gas and Basic Petrochemicals; Deputy Manager of Production of Pemex Gas and Basic Petrochemicals; and Project Leader for Maximizing the Impact of Technology in Gas Processing Complex La Cangrejera of Pemex Petrochemicals. *Other board memberships*: CENAGAS (Alternate); and Centro Nacional de Metrología. *Family relations*: None.	2019
Mr. Antonio López Velarde Loera	Board Member of Pemex Industrial Transformation (refer to Petróleos Mexicanos)	2021
Mr. Ángel Cid Munguía.	Board Member of Pemex Industrial Transformation (refer to Pemex Exploration and Production)	2021
Mr. Gabriel Yorio González	Board Member of Pemex Industrial Transformation and Acting Undersecretary of Income of the Ministry of Finance and Public Credit (refer to Petróleos Mexicanos)	2019
Mr. Jorge Luis Basaldúa Ramos	Board Member of Pemex Industrial Transformation and Acting General Director of Pemex Industrial Transformation (refer to Pemex Exploration and Production)	2020

Pemex Logistics—Directors and Executive Officers

Name	Position with Pemex Logistics	Year Appointed
Mr. Octavio Romero Oropeza	Chairperson of the Board of Pemex Logistics (refer to Petróleos Mexicanos)	2018
Mr. Marcos Manuel Herrería Alamina	Board Member of Pemex Logistics (refer to Petróleos Mexicanos)	2019
Ms. Brenda Fierro Cervantes	Board Member of Pemex Logistics and Deputy Director of Information Technology of Petróleos Mexicanos *Born*: 1974 *Business experience*: Acting Chief Information Officer/Acting Corporate Director of Information Technology and Deputy Director of Technologic Alliance of Petróleos Mexicanos; Project Leader of Lingo Systems, S.A. de C.V.; Director of New Technologies of the Government of Mexico City; and Deputy Director of Programming and Design of the Government of Mexico City. *Family relations*: None.	2019
Mr. Guillermo Alejandro Perabeles Garza	Board Member of Pemex Logistics and Deputy Director of Strategic Planning and Regulatory Analysis of Petróleos Mexicanos *Born*: 1948 *Business experience*: Deputy Manager of Strategy Optimization at Petróleos Mexicanos; Executive Director of Regulations Proposal of the Government of Mexico City; and Director of Administrative Regulation of the Government of Mexico City. *Family relations*: None.	2019
Mr. José María del Olmo Blanco	Board Member of Pemex Logistics and Acting Deputy Director of Budget and Accounting of Petróleos Mexicanos *Born*: 1971 *Business experience*: Associate Managing Director of Budget Control of Petróleos Mexicanos; Deputy Manager of Budget Regulations of Petróleos Mexicanos; and Deputy Manager of Liaison and Supervisory Control of Petróleos Mexicanos. *Family relations*: None.	2022
Ms. Francisca Lucía González Gaytán	Board Member of Pemex Logistics and Coordinator of Procurement and Supply for Pemex Industrial Transformation *Born*: 1972 *Business experience*: Associate Managing Director of Management and Control of Consumer Goods Warehouses of Petróleos Mexicanos; Strategy Coordinator of Procurement and Supply of Petróleos Mexicanos; and Acting Director of Management of the Council of Xalapa, Veracruz. *Family relations*: None.	2020

Pemex Logistics—Directors and Executive Officers

Name	Position with Pemex Logistics	Year Appointed
Vacant	Board Member of Pemex Logistics and Deputy Director of Risk Management and Reinsurance of Petróleos Mexicanos	
Mr. Javier Emiliano González del Villar	General Director of Pemex Logistics	2018
	Born: 1972	
	Business experience: Associate Managing Director of Pipelines Transportation, Maintenance and Services of Petróleos Mexicanos; General Inspector of the Federal Police; and Advisor of the National Commissioner of the Comisión Nacional contra las Adicciones.	
	Family relations: None.	

Compensation of Directors and Officers

For the year ended December 31, 2021, the aggregate compensation of executive officers of Petróleos Mexicanos and the existing subsidiary entities (15 people) paid or accrued in that year for services in all capacities was Ps. 34.3 million. Except in the case of the independent members, with respect to the previous Board of Directors of Petróleos Mexicanos and the boards of directors of the existing subsidiary entities, and the independent members, with respect to the new Board of Directors of Petróleos Mexicanos, the members of our boards of directors do not receive compensation for their services. The compensation paid or accrued during 2021 to the professional members of the previous Board of Directors of Petróleos Mexicanos and boards of directors of the existing subsidiary entities was Ps. 7.6 million. See "Item 7—Major Shareholders and Related Party Transactions—Related Party Transactions" for information about the salary advances that we offer to our executive officers as an employee benefit.

Board Practices

Except in the case of the independent members with respect to the Board of Directors of Petróleos Mexicanos, neither the members of the boards of directors nor the executive officers of Petróleos Mexicanos or the productive state-owned subsidiaries are appointed for a specific term. The length of the terms of the Secretary of Energy and the Secretary of Finance and Public Credit is, however, limited by the length of their respective positions in the Mexican Government. The five independent members of the Board of Directors of Petróleos Mexicanos will be appointed for five-year terms, and may be appointed for an additional term of the same length.

The Mexican Government representatives that serve as members of the boards of directors of Petróleos Mexicanos and each of the existing subsidiary entities may be removed at the discretion of the President of Mexico. The independent members of the Board of Directors of Petróleos Mexicanos may be removed for cause, including failure to carry out the duties and obligations set forth in the Petróleos Mexicanos Law, by the President of Mexico upon Senate approval.

The Board of Directors of Petróleos Mexicanos appoints members to and convened the five committees established in accordance with the Petróleos Mexicanos Law to support its work. Unless otherwise specified in the Petróleos Mexicanos Law, the memberships of these committees must consist of at least three, but no more than five, members of the Board of Directors of Petróleos Mexicanos. Each of these committees must include two independent members of the Board of Directors of Petróleos Mexicanos, with the exception of the Audit Committee, which must include three independent members. Each of the Secretary of Energy, the Secretary of Finance and Public Credit and any ministry-level secretary serving as a member of the Board of Directors of Petróleos Mexicanos may designate one or more alternates to take his or her place at committee meetings, provided that these alternates are public officials whose positions are not more than two levels below such secretary's position in the Mexican Government.

The committees may authorize a representative of the General Director to attend their meetings as a guest with the right to participate, but not vote, when deemed advisable for the performance of their duties.

Audit Committee

The Audit Committee of the Board of Directors of Petróleos Mexicanos is required to, among other duties, oversee our management, evaluate our financial and operational performance, monitor the status of our internal control systems, as well as nominate our external auditors, whose appointments are approved by the Board of Directors of Petróleos Mexicanos. See "Item 16C—Principal Accountant Fees and Services."

Each of the three members of the Audit Committee is "independent" of Petróleos Mexicanos within the meaning of Rule 10A-3 under the Securities Exchange Act of 1934, as amended (the Exchange Act). In accordance with the Petróleos Mexicanos Law, the Audit Committee consists of three independent members of the Board of Directors of Petróleos Mexicanos, each of whom will serve as the chair of the committee on a rotating, annual basis, as determined by the Board of Directors of Petróleos Mexicanos.

The Audit Committee consists of the following members:

- Mr. Juan José Paullada Figueroa, independent member of the Board of Directors of Petróleos Mexicanos and Chairperson of the Audit Committee;
- Ms. Laura Itzel Castillo Juárez, independent member of the Board of Directors of Petróleos Mexicanos; and
- Mr. José Eduardo Beltrán Hernández, independent member of the Board of Directors of Petróleos Mexicanos.

A representative of the General Director, the Head of the Internal Auditing Area, the Legal Director or any other person may attend the Audit Committee's meetings as a guest with the right to participate, but not vote, when deemed advisable and appropriate given the subject matter to be discussed.

Human Resources and Compensation Committee

The Human Resources and Compensation Committee is chaired by an independent member of the Board of Directors of Petróleos Mexicanos and includes the Secretary of Finance and Public Credit as a permanent member. The duties of the Human Resources and Compensation Committee include, among others, proposing the compensation of the General Director and other members of senior management of Petróleos Mexicanos within three levels of the General Director, as well as proposing hiring policies, performance management guidelines and the compensation of all other employees of Petróleos Mexicanos.

The Human Resources and Compensation Committee of Petróleos Mexicanos consists of the following members:

- Mr. Humberto Domingo Mayans Canabal, independent member of the Board of Directors of Petróleos Mexicanos and Chairperson of the Human Resources and Compensation Committee;
- Mr. José Eduardo Beltrán Hernández, independent member of the Board of Directors of Petróleos Mexicanos;
- Mr. Rogelio Eduardo Ramírez de la O, member of the Board of Directors of Petróleos Mexicanos;
- Ms. Tatiana Clouthier Carrillo, member of the Board of Directors of Petróleos Mexicanos; and
- Ms. María Luisa Albores González, member of the Board of Directors of Petróleos Mexicanos.

Strategy and Investment Committee

The Strategy and Investment Committee is chaired by an independent member of the Board of Directors of Petróleos Mexicanos on a rotating annual basis and is required to, among other duties, analyze our business plan and assist the Board of Directors of Petróleos Mexicanos in the approval of guidelines, priorities and general policies related to investments made by Petróleos Mexicanos.

The Strategy and Investment Committee of Petróleos Mexicanos consists of the following members:

- Ms. Laura Itzel Castillo Juárez, independent member of the Board of Directors of Petróleos Mexicanos and Chairperson of the Strategy and Investment Committee;
- Mr. Juan José Paullada Figueroa, independent member of the Board of Directors of Petróleos Mexicanos;
- Ms. Norma Rocío Nahle García, member of the Board of Directors of Petróleos Mexicanos;
- Mr. Rogelio Eduardo Ramírez de la O, member of the Board of Directors of Petróleos Mexicanos; and
- Ms. Tatiana Clouthier Carrillo, member of the Board of Directors of Petróleos Mexicanos.

Acquisitions, Leasing, Public Works and Services Committee

The Acquisitions, Leasing, Public Works and Services Committee, among other duties, reviews, evaluates, monitors and develops recommendations regarding the annual programs of Petróleos Mexicanos for acquisition, construction and services contracts, and determines whether an exception to the public bidding process is applicable in specific cases.

The Acquisitions, Leasing, Public Works and Services Committee of Petróleos Mexicanos consists of the following members:

- Mr. Lorenzo Mauricio Meyer Falcón , independent member of the Board of Directors of Petróleos Mexicanos and Chairperson of the Acquisitions, Leasing, Public Works and Services Committee;
- Mr. Humberto Domingo Mayans Canabal, independent member of the Board of Directors of Petróleos Mexicanos;
- Ms. Norma Rocío Nahle García, member of the Board of Directors of Petróleos Mexicanos;
- Mr. Rogelio Eduardo Ramírez de la O, member of the Board of Directors of Petróleos Mexicanos; and
- Ms. María Luisa Albores González, member of the Board of Directors of Petróleos Mexicanos.

External Businesses Committee

The External Businesses Committee, among other duties, assists the Board of Directors of Petróleos Mexicanos in issuing policies, guidelines, procedures and other provisions related to the operation, surveillance, performance evaluation and monitoring of the operating and business results of our affiliates.

The External Businesses Committee of Petróleos Mexicanos consists of the following members:

- Mr. José Eduardo Beltrán Hernández, independent member of the Board of Directors of Petróleos Mexicanos and Chairperson of the External Businesses Committee;
- Mr. Juan José Paullada Figueroa, independent member of the Board of Directors of Petróleos Mexicanos;
- Mr. Humberto Domingo Mayans Canabal, independent member of the Board of Directors of Petróleos Mexicanos;
- Ms. Norma Rocío Nahle García, member of the Board of Directors of Petróleos Mexicanos; and
- Mr. Rogelio Eduardo Ramírez de la O, member of the Board of Directors of Petróleos Mexicanos.

Employees

Excluding employees employed by us on a temporary basis, at December 31, 2021, Petróleos Mexicanos, its subsidiary entities and subsidiary companies had 123,842 employees, as compared to 123,899 at December 31, 2020. During 2021, Petróleos Mexicanos and the productive state-owned subsidiaries employed an average of 7,071 temporary employees.

The following table sets forth our employee numbers for the five years ended December 31, 2020:

Year	Petróleos Mexicanos and Subsidiary Entities	Subsidiary Companies	Total
2017	124,660	3,281	127,941
2018	124,818	3,203	128,021
2019	122,646	3,089	125,735
2020	120,936	2,963	123,899
2021	120,798	3,044	123,842

Source: Petróleos Mexicanos and the subsidiary companies.

As of December 31, 2021, the Petroleum Workers' Union represented 80.9% of the work force of Petróleos Mexicanos and the productive state-owned subsidiaries. The members of the Petroleum Workers' Union are PEMEX employees and they elect their own leadership from among their ranks. Our relationship with our employees is regulated by the *Ley Federal de Trabajo* (which we refer to as the Federal Labor Law), a collective bargaining agreement between Petróleos Mexicanos and the Petroleum Workers' Union and the *Reglamento de Trabajo del Personal de Confianza de Petróleos Mexicanos y Empresas Subsidiarias* (Employment Regulation for White Collar Employees of PEMEX and Subsidiary Entities). The collective bargaining agreement is subject to renegotiation every two years, although salaries are reviewed annually. Since the Petroleum Workers' Union was officially established in 1938, we have

not experienced labor strikes; we have experienced work stoppages for short periods of time, but none of these stoppages had a material adverse effect on our operations.

On September 30, 2021, Petróleos Mexicanos and the Petroleum Workers' Union amended their collective bargaining agreement. The amendment became effective on August 1, 2021. The amended agreement provides for a 3.4% increase in wages and a 1.76% increase in benefits and will regulate their labor relations until July 31, 2023.

In accordance with the Federal Labor Law and collective bargaining agreement in effect as of December 31, 2021, Petróleos Mexicanos and the productive state-owned subsidiaries are under an obligation to pay seniority premiums to retiring employees and pensions to retired employees, as well as death benefits and pensions to certain survivors of retired employees. Retirees are entitled to receive increases in their pensions, of at least the increase in NCPI from July 2021 to July 2022 and up to a maximum of the increase granted to salaries, whenever salary increases are granted to current employees. We also provide health and medical benefits to employees, retired employees and their beneficiaries and, subject to our overall budgetary constraints, we provide an interest-rate subsidy on employees' mortgage loans.

On November 19, 2020, we, along with the Ministry of Finance and Public Credit, agreed to exchange 16 promissory notes in favor of Petróleos Mexicanos (notes 5 to 20) in a total amount of Ps. 128.7 billion. for 18 series of Mexican Government local bonds (the "Government Bonds"). The resources from the Government Bonds will be exclusively transferred to the *Fondo Laboral Pemex* (Pemex Labor Fund, or "FOLAPE") for the obligation payment related to its pension and retirement plan obligation. For further information about Government Bonds, see Note 15-A and 15-B to our consolidated financial statements included herein.

As of November 11, 2015, pursuant to an agreement with the Petroleum Workers' Union, the retirement age for employees with less than 15 years of service is 60 (compared to 55 for employees with more than 15 years of service). Employees must serve for at least 30 years in order to be eligible to receive full retirement benefits. New employees hired as of that date receive individual defined contributions retirement plans. Employees who began serving prior to that date are permitted and incentivized to opt into the defined contributions retirement plans from their existing defined benefits retirement plans.

On December 24, 2015, the Ministry of Finance and Public Credit published in the Official Gazette of the Federation the General provisions regarding the assumption by the Mexican Government of the payment obligations related to pensions and retirement plans of Petróleos Mexicanos and its productive state-owned subsidiaries. On August 3, 2016, the Ministry of Finance and Public Credit informed us that the Mexican Government would assume Ps. 184.2 billion in payment liabilities related to our pensions and retirement plans, and accordingly replaced the Ps. 50.0 billion promissory note issued to us on December 24, 2015 with Ps. 184.2 billion in promissory notes.

On November 5, 1997, the Ministry of Finance and Public Credit and the Board of Directors of Petróleos Mexicanos authorized the formation of a trust called the Pemex Labor Fund. This fund is a vehicle to fund labor liabilities, current pension payments and seniority premiums. We have designed a contribution plan to increase the funds held in this trust and to continue paying labor liabilities and pensions. Our contributions to the plan assets for our retirement benefits totaled Ps. 64,128 million in 2021 and Ps. 62,929 million in 2020. As of December 31, 2021 and 2020, the balance of the Pemex Labor Fund was Ps. 30.4 million and Ps. 9.4 million, respectively.

Item 7. Major Shareholders and Related Party Transactions

Major Shareholders

Petróleos Mexicanos and the subsidiary entities have no shareholders because they are public entities of the Mexican Government. The Mexican Government controls us and incorporates the consolidated annual budget and financing program of Petróleos Mexicanos and the subsidiary entities into its budget, which must be approved by the Chamber of Deputies each year. Any adjustment proposed by the Board of Directors of Petróleos Mexicanos to change our annual financial balance goal or increase the limit on our wage and salary expenditures budget or our financing program must be approved by the Chamber of Deputies. See "Item 4—Information on the Company—General Regulatory Framework" for more information about the Mexican Government's authority with respect to our budget. Our operations in the oil and gas sector are also regulated by the Mexican Government and its ministries.

Mexican Government officials hold five of the ten seats on the Board of Directors of Petróleos Mexicanos, and the Secretary of Energy is the Chairperson of the Board of Directors of Petróleos Mexicanos with the power to cast a tie-breaking vote. An additional five seats on the Board of Directors are held by independent members appointed by the President of Mexico and ratified by the Senate. The General Director of Petróleos Mexicanos is a member of the President of Mexico's cabinet. See also "Item 3—Key Information—Risk Factors—Risk Factors Related to our Relationship with the Mexican Government."

Related Party Transactions

Directors and employees of Petróleos Mexicanos and the Subsidiary Entities are subject to regulations addressing conflicts of interest, including the *Petróleos Mexicanos Law*, *Ley Federal de Responsabilidades Administrativas de los Servidores Públicos* (Federal Law of Administrative Responsibilities of Public Officials) and the Anti-corruption Policies and Guidelines for Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies. Under these provisions, directors and employees of Petróleos Mexicanos are obligated to "recuse themselves from intervening in any way in the attention to, processing or resolution of matters in which they might have personal, family or business interest, including those where some benefit can result for themselves, their spouse, blood or affinity relatives up to the fourth degree, or civil relatives, or for third parties with which they have professional, labor or business relations, or for partners or partnerships where the public officials or the persons referred above are or have been members thereof."

The Board of Directors of Petróleos Mexicanos, including the independent members who are not public officials, are subject to the duties of loyalty and diligence. In accordance with the Petróleos Mexicanos Law, an independent member of the Board of Directors of Petróleos Mexicanos may be removed from his or her position for, among other causes: (1) utilizing for personal benefit or for the benefit of any third party the information made available to him or her in connection with the exercise of his or her duties as a board member; (2) disclosing such information in violation of applicable law; or (3) not recusing him or herself from discussion of and voting on matters in respect of which he or she has a conflict of interest. A member of the Board of Directors of Petróleos Mexicanos or of the board of directors of an existing subsidiary entity who acts in contravention of the Petróleos Mexicanos Law may be held liable for any damages that he or she caused to Petróleos Mexicanos or an existing subsidiary entity.

As an employee benefit, we offer salary advances to all of our eligible Petroleum Workers' Union and non-union workers, including our executive officers, pursuant to the programs set forth in the collective bargaining agreement and in the Employment Regulation of White Collar Employees of Petróleos Mexicanos and Subsidiary Entities, respectively. The salary advances, which are non-interest bearing, are offered to each eligible employee in an amount up to a maximum of four months' salary and are repaid through salary deductions in equal installments over a period of either one or two years, as elected by the employee. Most of our employees take advantage of this benefit. The largest amount of salary advances outstanding to executive officers at any one time during 2021 was Ps. 265,000. As of March 31, 2022, the aggregate amount of salary advances outstanding to our executive officers was Ps. 168,000. For further information about compensation of Directors and Officers, see Note 25 to our consolidated financial statements included herein.

Additionally, Mr. Manuel Bartlett Díaz, one of the members of the Board of Directors of Petróleos Mexicanos, is also the Chief Executive Officer of CFE and due to the several purchase agreements that CFE has entered with our subsidiary, Pemex Industrial Transformation, we consider this a related party transaction. For further information about this related party transaction, see Note 25 to our consolidated financial statements included herein.

Item 8. Financial Information Consolidated Statements and Other Financial Information

See Item 18. "Financial Statements."

Legal Proceedings

Labor-Related Proceedings

We are a party to various legal actions involving labor claims of former and present employees. These labor disputes relate to severance payments, life insurance benefits, extensions of labor contracts, level of wages, improper termination and employee housing. We do not expect these lawsuits to have a material adverse effect on our financial condition or future results of operations.

For information on our negotiations with the Petroleum Workers' Union and collective bargaining agreements, see "Item 6—Directors, Senior Management and Employees—Employees."

Governmental Investigations and Other Monitoring Activities

The *Auditoría Superior de la Federación* (Superior Audit Office of the Federation, or the "ASF"), pursuant to the Petróleos Mexicanos Law, has the authority to annually review Petróleos Mexicanos and its subsidiary entities. The ASF reports directly to the Mexican Congress. The ASF prepares reports of its observations based on its review. These reports are subject to our analysis and, if necessary, our clarification and explanation of any issues raised during the audit. Discrepancies in amounts spent may subject our officials, as public servants, to legal sanctions. However, in most instances, any observed issues are clarified and disposed of.

The public officers of Petróleos Mexicanos and the Subsidiary Entities are subject to the General Law of Administrative Liabilities. The Liabilities Unit at Petróleos Mexicanos, which is part of the *Secretaría de la Función Pública* (Ministry of Public Function, or the "SFP"), is responsible for receiving complaints and investigating violations of the General Law of Administrative Liabilities, carrying out investigations and administrative liability procedures, as well as imposing administrative penalties in accordance with the applicable laws.

We have adopted a corporate compliance program that is designed to promote compliance with applicable laws, including an internal control system that aims to prevent risks, foster the exchange of information and communication, and anticipate and address operational weaknesses. While we have established measures to identify, monitor, mitigate and remediate irregular or illicit actions, we are subject to the risk that our management, employees, contractors or any person doing business with us may engage in fraudulent activity, corruption or bribery, circumvent or override our internal controls and procedures or misappropriate or manipulate our assets for their personal benefit or of third parties to our detriment. This risk is heightened by the fact that we have a large number of complex, valuable contracts with local and foreign third parties. We have implemented a risk management model and internal policies intended to identify, monitor and mitigate those risks. However, our controls may not be effective in all cases. Further, we are subject to the risk that these compliance policies and procedures may not be effective in preventing intentional misconduct, reckless or negligent actions of our executives or employees, our contractors or any other individual doing business with us. See "Item 3—Key Information—Risk Factors—Risk Factors Related to Our Operations—We are subject to Mexican and international anti-corruption, anti-bribery and anti-money laundering laws. Our failure to comply with these laws could result in penalties, which could harm our reputation and have an adverse effect on our business, results of operations and financial condition."

We cooperate with investigations by Mexican, U.S. and other government authorities from time to time, including investigations relating to Odebrecht, S.A., Grupo Fertinal, S.A. de C.V., Agro Nitrogenados, S.A. de C.V. and Vitol, Inc. As a policy, we cooperate with government authorities in connection with such investigations. In addition, we periodically monitor our compliance with applicable laws and regulations to enhance our compliance program. Further, the SFP conducts administrative reviews and, in the past, it and other government entities have brought proceedings against our senior managers and employees for activities detrimental to our business. We are committed to collaborating with competent authorities to pursue and combat illicit activities and to protect our interests and reputation. We have a zero tolerance policy regarding acts of bribery and corruption.

Actions Against the Illicit Market in Fuels

The illicit market in fuels in Mexico primarily involves the theft, adulteration and illegal transport, storage, distribution and commercialization of the hydrocarbons that we and other companies produce. This criminal activity mainly consists of the following:

- Illegal tapping of our pipelines threatens the integrity of our pipeline system, thereby increasing the associated risks for personnel, facilities, the general population and the environment. Illegal tapping of our pipelines has caused volumetric deviations of products, explosions, loss of life, injuries and environmental damages, some of which have been material, like the explosion occurred on October 31, 2021, in San Pablo Xochimehuacan, Puebla, which resulted in the loss of life and injuries to residents of this community, as well as the destruction or damage to homes and other properties near the site of the incident.
- Theft and illegal trade in fuels, which reduces our revenues by the amount that would have been generated from the sale of the stolen products and reduces our net income because the production cost of stolen product is included in our cost of sales. The increase in surveillance as well as the actions taken against illegal trade in fuels, have allowed us to protect 13.2 million liters of hydrocarbons in 2021.
- Tampering with the product quality, which negatively impacts consumers and our reputation.

While in recent years we experienced an increase in theft of and illegal trade in the fuels that we produce, during 2020 and 2021 we reduced these illicit activities. We estimate that the average theft of fuel amounted to approximately 3.6 thousand barrels per day in 2021, a decrease of 25.0% as compared to 4.8 thousand barrels per day in 2020. For the years ended December 31, 2021 and 2020, losses resulting from fuel theft amounted to Ps. 6,791.4 million and Ps. 4,279.5 million, respectively.

Given the sophistication and breadth of illegal networks, in recent years we have implemented several initiatives to develop a sustainable operating model to safeguard our workers, facilities, assets and values. These initiatives have sought to:

- Strengthen our *Salvaguardia Estratégica* (Strategic Safeguard) strategy, which allows us to respond in a timely manner to risks of illegal activity. This strategy likewise relies on federal laws and regulations designed to prevent and punish crimes relating to fuel theft.
- Strengthen coordination and collaboration between Petróleos Mexicanos and our subsidiary entities, as well as government authorities, which include, among others, the *Fiscalía General de la República* (Office of the Federal Attorney General), *Procuraduría Federal del Consumidor* (Federal Consumer's Office), *Servicio de Administración*

Tributaria (Tax Administration Service, or the "SAT"), federal, state and municipal police, the *Secretaría de la Defensa Nacional* (Ministry of National Defense) and the Mexican Navy, the *Secretaría de Seguridad Pública y Protección Ciudadana* (Ministry of Public Security and Citizen Protection), the Ministry of Energy, the Ministry of Finance and Public Credit, the *Guardia Nacional* (National Guard) and the *Servicio de Protección Federal* (Federal Protective Service).

- Increase safety in and around pipelines, ground transportation and company facilities.
- Indoor and outdoor measurements at our facilities.
- Incorporate best practices for industrial safety, civil protection and environmental preservation in Strategic Safeguard works.
- Optimize our human capital and modernize our technology.
- Modernize our information systems to improve our strategic decision making and our response time.

The *Plan Conjunto de Atención a Instalaciones Estratégicas de Pemex* (Joint Plan for Attention to Strategic Facilities of Pemex), implemented in December 2019, is aimed at further preventing and decreasing the illicit market in fuels. The Joint Plan for Attention to Strategic Facilities of Pemex was instated to safeguard strategic facilities of Petróleos Mexicanos. As a result, during 2020 and 2021 we observed a significant decrease in the volumetric deviation of hydrocarbon products, from an average of 6.4 thousand barrels per day in 2019 to 4.8 thousand barrels per day in 2020, and a further decrease to 3.6 thousand barrels per day in 2021. These efforts also led to the identification and sealing of 11,037 illegal pipeline taps in 2021, as compared to 11,022 illegal pipeline taps in 2020, an increase of 0.1%.

The principal measures of this plan are:

- Strengthen our Strategic Safeguard strategy through the implementation of four principal measures related to hydrocarbon theft, transport, storage and marketing, together with an ancillary measure focused on prosecution and enforcement. We work with many different authorities on these measures, including: the *Secretaría de Bienestar* (Welfare Ministry), the Ministry of National Defense, the Mexican Navy, the National Guard, the *Centro Nacional de Información* (National Information Center), the Ministry of Public Security and Citizen Protection, the Office of the Federal Attorney General, the *Policía Estatal* (State Police), the *Agencia de Seguridad, Energía y Ambiente* (Security, Energy and Environmental Agency), the CRE, the SAT, the Federal Consumer's Office and relevant judicial authorities;
- Increase the security of our pipelines, land transport and facilities by establishing collaboration agreements with the *Fuerzas Armadas de México* (Mexican Armed Forces), the National Guard and the Federal Protective Service;
- Report and removal of personnel who have been properly identified as participants in illicit activities related to the theft of hydrocarbons;
- Special attention to 56 facilities identified as requiring priority, including 37 storage and dispatch terminals, one of which is located in a maritime terminal, 12 repumping stations and six refineries;
- Control access points to vehicle entrances and exits of priority facilities and monitor control rooms and vertical tank areas; and
- Strengthen fuel distribution capacity through alternative means of transport to the pipeline.

Our continued focus on the detection of illegal pipeline taps in 2021, together with the strict application of ground transportation protocols, enabled us to collect more information and develop more effective strategies to combat fuel theft, which in turn improved our ability to deploy ground patrol for the immediate identification and sealing of pipeline taps and avoid additional extraction of our hydrocarbon products.

Additionally, some of our personnel have been implicated for their involvement in organized fuel theft and trade. It is our policy to inform the Liabilities Unit at Petróleos Mexicanos when we are aware of information related to the illicit market in fuels that involves our personnel. The Liabilities Unit has the authority to investigate, undertake administrative proceedings, impose penalties against employees or former employees in connection with this issue and file criminal complaints through legal representation.

Civil Actions

In the ordinary course of our business, we are a party to a number of lawsuits of various types. We evaluate the merit of each claim and assess the likely outcome, accruing a contingent liability when an unfavorable decision is probable and the amount is reasonably estimable. As of December 31, 2020 and 2021, we had accrued a reserve of Ps. 8.3 billion and Ps. 11.1 billion,

respectively, for our contingent liabilities in connection with these lawsuits. Our material legal proceedings are described in Note 20 to our consolidated financial statements included in this report, and those descriptions are incorporated by reference under this Item.

Dividends

Pursuant to the Petróleos Mexicanos Law, as of January 1, 2016, Petróleos Mexicanos and its subsidiary entities are subject to a dividend policy that requires them to pay a state dividend to the Mexican Government on an annual basis. In accordance with the Federal Revenue Law for the applicable year, we were not required to pay a state dividend in 2017 through 2021, and we will not be required to pay a state dividend in 2022. For more information, see "Item 4—Taxes, Duties and Other Payments to the Mexican Government—Fiscal Regime for PEMEX—Other Payments to the Mexican Government."

Item 9. The Offer and Listing

Trading in the debt securities issued by Petróleos Mexicanos takes place primarily in the over-the-counter (OTC) market. All the debt securities issued by Petróleos Mexicanos that are registered pursuant to the U.S. Securities Act of 1933 (which we refer to as the Securities Act) are also listed on the Luxembourg Stock Exchange and traded on the Euro MTF market of the Luxembourg Stock Exchange.

Item 10. Additional Information

Memorandum and Articles of Association

The Mexican Congress established Petróleos Mexicanos by a decree dated June 7, 1938, effective July 20, 1938. None of Petróleos Mexicanos or the subsidiary entities has bylaws or articles of association. Petróleos Mexicanos and the subsidiary entities, are public entities of the Mexican Government and each is a legal entity empowered to own property and carry on business in its own name.

The activities of Petróleos Mexicanos and the subsidiary entities are regulated by the Mexican Constitution, the Petróleos Mexicanos Law, Regulations to the Petróleos Mexicanos Law, the Hydrocarbons Law and other federal laws and regulations. See "Item 4—Information on the Company—History and Development." In accordance with the Petróleos Mexicanos Law, the Board of Directors of Petróleos Mexicanos has the following committees: the Audit Committee, the Human Resources and Compensation Committee, the Strategy and Investment Committee, the Acquisitions, Leasing, Public Works and Services Committee and the External Businesses Committee. See "Item 6—Directors, Senior Management and Employees."

Under the Petróleos Mexicanos Law and the Regulations to the Petróleos Mexicanos Law, our directors are obligated to abstain from voting on a proposal, arrangement or contract in which they have a personal, family or business interest. Our directors do not have the power to vote compensation to themselves or any other member of the board. Except in the case of the independent board members, our directors do not receive compensation for their services as members of the boards of directors of Petróleos Mexicanos and the subsidiary entities. Under the Petróleos Mexicanos Law, our directors must perform their duties without obtaining or attempting to obtain any benefits greater than those granted by law. Therefore, our directors do not have borrowing powers exercisable by themselves. There is no requirement for early retirement for our directors.

Material Contracts

As of December 31, 2021 and 2020, we have entered into contracts with various contractors for Ps. 505,636 million and Ps. 374,157 million, respectively. These contracts are for the development of investment projects. See Note 26 to our consolidated financial statements included herein.

On January 27, 2009, we entered into an indenture with Deutsche Bank Trust Company Americas, as Trustee. This agreement provides for our issuance from time to time of unsecured debt securities. On the same date, we entered into a distribution agreement with Calyon Securities (USA) Inc. (now known as Credit Agricole Securities (USA) Inc.), Citigroup Global Markets Inc., Citigroup Global Markets Limited, HSBC Securities (USA) Inc. and Santander Investment Securities Inc. pursuant to which we established a U.S. $7.0 billion medium-term note, Series C, program. Pursuant to the 1996 guaranty agreement referred to above, our obligations under all notes issued under this program are jointly and severally guaranteed by Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals. In December 2010, we appointed Credit Suisse Securities (USA) LLC as an agent under the 2009 distribution agreement referred to above. In each of December 2010 and January 2010, we increased the size of this program to U.S. $12.0 billion and U.S. $22.0 billion, respectively. We issued U.S. $3.5 billion of notes and bonds under this program in 2011. In 2012, we issued U.S. $5.3 billion of notes and bonds under this program. In 2013, we increased the size of this program to U.S. $32.0 billion and issued U.S. $6.9 billion of notes and bonds under it. In 2014, we increased the size of this program to U.S. $42.0 billion and issued U.S. $7.9 billion of notes and bonds under it. In 2017, we increased the size of this program to

U.S. $92.0 billion and issued €4.3 billion, U.S. $5.0 billion and £450.0 million of notes and bonds under it. In 2018, we increased the size of this program to U.S. $102.0 billion and issued U.S. $6.0 billion, €3.15 billion and Swiss francs 365.0 million of notes and bonds under it. In 2019, we issued U.S. $14.8 billion of notes and bonds under this program. See "Item 5—Operating and Financial Review and Prospects—Liquidity and Capital Resources—Financing Activities." In 2020, we issued U.S. $6.5 billion of notes and bonds under this program.

Exchange Controls

Mexico has had a free market for foreign exchange since 1991, and the Mexican Government has allowed the peso to float freely against the U.S. dollar since December 1994. We have no control over or influence on this exchange rate policy. The Mexican Government has announced that it does not intend to change its floating exchange rate policy, but there is no guarantee that the Mexican Government will not change this policy.

Taxation

The 1997 Securities, the 1999 Securities, the 2003 Securities, the 2004 Securities, the 2006 Securities, the 2008 Securities, the 2009 Securities, the 2010 Securities, the 2011 Securities, the 2012 Securities, the 2013 Securities, the 2014 Securities, the 2016 Securities, the 2018 Securities, the 2020 Securities and the 2022 Securities.

As of the date of this annual report, we have registered the following securities with the Securities and Exchange Commission.

Pursuant to a registration statement on Form F-4 (File No. 333-7796), which was declared effective by the SEC on October 17, 1997, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $400,000,000 of 9.50% Global Guaranteed Bonds due 2027, which we refer to as the 1997 Securities. In December 2004 and February 2006, an aggregate amount of U.S. $376,250,000 of the 1997 Securities were exchanged for bonds issued by the Pemex Project Funding Master Trust (which we refer to as the Master Trust).

Pursuant to a registration statement on Form F-4 (File No. 333-10706), which was declared effective by the SEC on October 1, 1999, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $500,000,000 of 9.50% Puttable or Mandatorily Exchangeable Securities (POMESSM) due 2027, which we refer to as the 1999 Securities. In December 2004 and February 2006, an aggregate amount of U.S. $421,522,000 of the 1999 Securities were exchanged for POMESSM issued by the Master Trust. All outstanding 1999 Securities of Petróleos Mexicanos were, on March 16, 2006, mandatorily exchanged for 9.50% Global Guaranteed Bonds due 2027 issued by Petróleos Mexicanos, thereby increasing the outstanding amount of the 1997 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-103197), which was declared effective by the SEC on February 24, 2003, the Master Trust, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $500,000,000 of 8.625% Bonds due 2022. Pursuant to a registration statement on Form F-4 (File No. 333-107905), which was declared effective by the SEC on August 21, 2003, the Master Trust, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $510,154,000 of 8.625% Bonds due 2022. We refer to the securities registered in 2003 under these registration statements as the 2003 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-118373), which was declared effective by the SEC on August 31, 2004, the Master Trust, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $47,085,000 of 8.625% Bonds due 2022. We refer to the securities registered in 2004 as the 2004 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-126941), which was declared effective by the SEC on January 13, 2006, the Master Trust, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $228,735,000 of 8.625% Bonds due 2023, U.S. $354,477,000 of 9.500% Bonds due 2027, U.S. $403,746,000 of POMESSM due 2027 and U.S. $500,000,000 of 6.625% Guaranteed Bonds due 2035. Pursuant to a registration statement on Form F-4 (File No. 333-126948), which was declared effective by the SEC on January 13, 2006, the Master Trust, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $21,265,000 of 8.625% Bonds due 2023, U.S. $45,523,000 of 9.500% Bonds due 2027 and U.S. $96,254,000 of POMESSM due 2027. All outstanding POMES registered under these registration statements were, on March 15, 2006, mandatorily exchanged for 9.500% Bonds due 2027. Pursuant to a registration statement on Form F-4 (File No. 333-136674), which was declared effective by the SEC on November 3, 2006, the Master Trust, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered

pursuant to the Securities Act up to U.S. $751,995,000 of 6.625% Guaranteed Bonds due 2035. We refer to the securities registered in 2006 under these registration statements as the 2006 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-152486), which was declared effective by the SEC on December 18, 2008, the Master Trust, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $501,000,000 of 6.625% Guaranteed Bonds due 2035 and up to U.S. $500,000,000 of 6.625% Guaranteed Bonds due 2038. We refer to the securities registered in 2008 as the 2008 Securities.

Effective as of September 30, 2009, Petróleos Mexicanos assumed, as primary obligor, all of the Master Trust's obligations as issuer of the 2001 Securities, the 2003 Securities, the 2004 Securities, the 2006 Securities and the 2008 Securities. As a result, effective as of September 30, 2009, Petróleos Mexicanos is the issuer of all Registered Securities (as defined below).

Pursuant to a registration statement on Form F-4 (File No. 333-168326), which was declared effective by the SEC on August 31, 2010, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $63,314,000 of 8.00% Notes due 2019, up to U.S. $1,000,000,000 of 6.000% Notes due 2020, up to U.S. $2,000,000,000 of 5.500% Notes due 2021 and up to U.S. $1,000,000,000 of 6.625% Bonds due 2035. We refer to the securities registered in 2010 as the 2010 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-175821), which was declared effective by the SEC on August 31, 2011, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $1,000,000,000 of 5.500% Notes due 2021 and up to U.S. $1,250,000,000 of 6.500% Bonds due 2041. We refer to the securities registered in 2011 as the 2011 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-182553), which was declared effective by the SEC on July 23, 2012, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $2,100,000,000 of 4.875% Notes due 2022 and up to U.S. $1,750,000,000 of 5.500% Bonds due 2044. We refer to the securities registered in 2012 as the 2012 Securities.

Pursuant to a registration statement on Form F-4/A (File No. 333-189852), which was declared effective by the SEC on July 25, 2013, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $2,100,000,000 of 3.500% Notes due 2023, up to U.S. $1,000,000,000 of 4.875% Notes due 2024, up to U.S. $500,000,000 of 6.500% Bonds due 2041 and up to U.S. $1,000,000,000 of 5.50% Bonds due 2044. We refer to the securities registered in 2013 as the 2013 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-198588), which was declared effective by the SEC on September 22, 2014, Petróleos Mexicanos, Pemex-Exploration and Production, Pemex-Refining and Pemex-Gas and Basic Petrochemicals registered pursuant to the Securities Act up to U.S. $500,000,000 of 4.875% Notes due 2024 and up to U.S. $3,000,000,000 of 6.375% Bonds due 2045. We refer to the securities registered in 2014 as the 2014 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-205763), which was declared effective by the SEC on February 22, 2016, Petróleos Mexicanos, Pemex Exploration and Production, Pemex Industrial Transformation, Pemex Drilling and Services and Pemex Logistics registered pursuant to the Securities Act up to U.S. $1,500,000,000 of 3.500% Notes due 2020, up to U.S. $1,000,000,000 of 4.250% Notes due 2025, $1,500,000,000 of 4.500% Notes due 2026, up to U.S. $1,500,000,000 of 5.50% Bonds due 2044 and up to U.S. $3,000,000,000 of 5.625% Bonds due 2046. Pursuant to a registration statement on Form F-4 (File No. 333-213351), which was declared effective by the SEC on November 11, 2016, Petróleos Mexicanos, Pemex Exploration and Production, Pemex Industrial Transformation, Pemex Drilling and Services and Pemex Logistics registered pursuant to the Securities Act up to U.S. $1,250,000,000 of 6.375% Notes due 2021, up to U.S. $2,069,302,000 of 4.625% Notes due 2023, up to U.S $3,000,000,000 of 6.875% Notes due 2026, and up to U.S. $3,500,000,000 of 6.750% Notes due 2047. We refer to the securities registered in 2016 as the 2016 Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-220721), which was declared effective by the SEC on February 22, 2018, Petróleos Mexicanos, Pemex Exploration and Production, Pemex Industrial Transformation, Pemex Drilling and Services and Pemex Logistics registered pursuant to the Securities Act up to U.S. $1,500,000,000 5.375% Notes due 2022, up to U.S. $1,000,000,000 Floating Rate Notes due 2022, up to U.S. $5,500,000,000 6.500% Notes due 2027 and up to U.S. $2,500,000,000 6.750% Bonds due 2047. Pursuant to a registration statement on Form F-4/A (File No. 333-227508), which was declared effective by the SEC on November 16, 2018, Petróleos Mexicanos, Pemex Exploration and Production, Pemex Industrial Transformation, Pemex Drilling and Services and Pemex Logistics registered pursuant to the Securities Act up to U.S. $2,500,000,000 5.350% Notes due 2028, up to U.S. $2,000,000,000 6.500% Notes due 2029 and up to U.S. $3,328,663,000 6.350% Bonds due 2048. We refer to the securities registered in 2018 as the 2018 Securities and, together with the 1997 Securities, the 2003 Securities, the 2004 Securities, the

2006 Securities, the 2008 Securities, the 2009 Securities, the 2010 Securities, the 2011 Securities, the 2012 Securities, the 2013 Securities, the 2014 Securities and the 2016 Securities, as the Registered Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-239722), which was declared effective by the SEC on September 11, 2020, Petróleos Mexicanos, Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics registered pursuant to the Securities Act up to U.S. $2,360,430,000 6.490% Notes due 2027, U.S. $4,420,831,000 6.840% Notes due 2030, US $3,800,000,000 5.950% Notes due 2031, U.S. $8,066,405,000 7.690% Bonds due 2050 and U.S. $3,800,000,000 6.950% Bonds due 2060. We refer to the securities registered in 2020 as the 2020 Securities and together with the 1997 Securities, the 2003 Securities, the 2004 Securities, the 2006 Securities, the 2008 Securities, the 2009 Securities, the 2010 Securities, the 2011 Securities, the 2012 Securities, the 2013 Securities, the 2014 Securities, the 2016 Securities and the 2018 Securities, as the Registered Securities.

Pursuant to a registration statement on Form F-4 (File No. 333-259870), which was declared effective by the SEC on February 28, 2022, Petróleos Mexicanos, Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics registered pursuant to the Securities Act up to U.S. $1,500,000,000 6.875% Notes due 2025 and U.S. $6,813,567,000 6.700% Notes due 2032. We refer to the securities registered in 2022 as the 2022 Securities and together with the 1997 Securities, the 2003 Securities, the 2004 Securities, the 2006 Securities, the 2008 Securities, the 2009 Securities, the 2010 Securities, the 2011 Securities, the 2012 Securities, the 2013 Securities, the 2014 Securities, the 2016 Securities, the 2018 Securities and the 2020 Securities as the Registered Securities.

Taxation Generally

The following summary contains a description of the principal Mexican and U.S. federal income tax consequences of the ownership and disposition of the Registered Securities, but it does not purport to be a comprehensive description of all of the tax considerations that may be relevant to a decision to invest in, or dispose of, the Registered Securities.

This summary is based on the federal tax laws of Mexico and the United States in force on the date of this Form 20-F, including the provisions of the income tax treaty between the United States and Mexico together with related protocols (which are subject to change), and does not describe any tax consequences arising under the laws of any state or municipality in Mexico, the United States or any other jurisdiction, or the laws of any taxing jurisdiction other than the federal laws of Mexico and the United States.

Mexico has also entered into, or is negotiating, tax treaties with various countries that may have effects on holders of Registered Securities. This report does not discuss the consequences (if any) of such treaties.

Each holder or beneficial owner of Registered Securities should consult its tax advisor as to the Mexican, United States or other tax consequences of the ownership and disposition of those securities, including the effect of any foreign, state or municipal tax laws, and the consequences of the application of any tax treaty to which Mexico is a party.

Mexican Taxation

This summary of certain Mexican federal tax considerations refers only to holders of Registered Securities that are not residents of Mexico for Mexican tax purposes and that will not hold the Registered Securities or a beneficial interest therein through a permanent establishment for tax purposes (we refer to any such non-resident holder as a Foreign Holder). For purposes of Mexican taxation, an individual is a resident of Mexico if he/she has established his/her domicile in Mexico. When an individual also has a place of residence in another country, that individual will be considered a resident of Mexico for tax purposes, if such individual has his/her center of vital interest in Mexico. An individual would be deemed to have his/her center of vital interest in Mexico if, among other things: (a) more than 50% of his/her total income for the year were derived from Mexican sources, or (b) his/her principal center of professional activities were located in Mexico.

A legal entity is a resident of Mexico if:

- it maintains the principal administration of its business in Mexico; or
- it has established its effective management in Mexico.

A Mexican national is presumed to be a resident of Mexico unless such person can demonstrate the contrary. If a legal entity or individual has a permanent establishment in Mexico, such permanent establishment shall be required to pay taxes in Mexico on income attributable to such permanent establishment in accordance with Mexican federal tax law.

Taxation of Interest. Under the Mexican Income Tax Law and rules issued by the Ministry of Finance and Public Credit applicable to PEMEX, payments of interest (which are deemed to include any amounts paid in excess of the original issue price of the relevant securities), made by a Mexican issuer (including Petróleos Mexicanos) in respect of notes or bonds and other debt securities to a Foreign Holder will generally be subject to a Mexican withholding tax assessed at a rate of 4.9%, if the following requirements are met:

- notice relating to the offering of such notes or bonds is given to the CNBV as required under the Securities Market Law and evidence of such notice is timely filed with the Ministry of Finance and Public Credit;
- such notes or bonds are placed outside of Mexico through banks or brokerage houses in a country that is party to a treaty to avoid double taxation with Mexico; and
- the issuer duly complies with the information requirements established in the general rules issued by the Ministry of Finance and Public Credit for such purposes.

If the effective beneficiaries, directly or indirectly, individually or jointly with related parties, receive more than 5% of the interest paid on such notes or bonds and are holders, directly or indirectly, individually or jointly, with related parties of more than 10% of the voting stock of the issuer or entities 20% or more of whose stock is owned directly or indirectly, individually or jointly, by parties related to the issuer, the withholding tax rate applicable to payment of interest on such notes or bonds may be significantly higher.

Payments of interest made by Petróleos Mexicanos or the subsidiary entities, except for Pemex Fertilizers and Pemex Ethylene, in respect of the Registered Securities to non-Mexican pension or retirement funds will be exempt from Mexican withholding taxes, provided that:

- such fund is duly organized pursuant to the laws of its country of origin and is the effective beneficiary of the interest payment;
- the income from such interest payment is exempt from income tax in its country of residence; and
- such fund delivers certain information as per rules issued by the Ministry of Finance and Public Credit.

Additional Amounts. Petróleos Mexicanos and the subsidiary entities, except for Pemex Fertilizers and Pemex Ethylene, have agreed, subject to specified exceptions and limitations, to:

- pay Additional Amounts (as defined in the indenture dated as of September 18, 1997, as supplemented, between Petróleos Mexicanos and Deutsche Bank) to the holders of the 1997 Securities in respect of the Mexican withholding taxes mentioned above;
- pay Additional Amounts (as defined in the indenture dated as of August 7, 1998, as supplemented, between Petróleos Mexicanos and Deutsche Bank) to the holders of the 1998 Securities in respect of the Mexican withholding taxes mentioned above;
- pay Additional Amounts (as defined in the indenture dated as of July 31, 2000, as supplemented, between Petróleos Mexicanos and Deutsche Bank) to the holders of the 2003 Securities and the 2004 Securities in respect of the Mexican withholding taxes described above;
- pay Additional Amounts (as defined in the indenture dated as of December 30, 2004, as supplemented, between Petróleos Mexicanos and Deutsche Bank) to the holders of the 2006 Securities and the 2008 Securities in respect of the Mexican withholding taxes described above; and
- pay Additional Amounts (as defined in the indenture dated as of January 27, 2009, as supplemented, between Petróleos Mexicanos and Deutsche Bank) to the holders of the 2009 Securities, the 2010 Securities, the 2011 Securities, the 2012 Securities, the 2013 Securities, the 2014 Securities and the 2016 Securities in respect of the Mexican withholding taxes described above.

If Petróleos Mexicanos pays Additional Amounts in respect of such Mexican withholding taxes, any refunds received with respect to such Additional Amounts will be for the account of Petróleos Mexicanos.

Holders or beneficial owners of the Registered Securities may be required to provide certain information or documentation necessary to enable Petróleos Mexicanos and the subsidiary entities to apply the appropriate Mexican withholding tax rate applicable to holders or beneficial owners of the Registered Securities. In the event that the specified information or documentation concerning such holder or beneficial owner, if requested, is not provided on a timely basis, the obligation of Petróleos Mexicanos and the subsidiary entities to pay Additional Amounts may be limited.

Taxation of Dispositions. Capital gains resulting from the sale or other disposition of the Registered Securities by a Foreign Holder will not be subject to Mexican income or withholding taxes.

Other Mexican Tax Considerations. Under the Mexican Income Tax Law, any discount received by a non-resident upon purchase of the notes or bonds from a Mexican resident or a non-resident with a permanent establishment in Mexico is deemed interest income, and therefore, subject to taxes in Mexico. Such interest income results from the difference between the face value (plus accrued interest not subject to withholding) and the purchase price of such notes or bonds.

Transfer and Other Taxes. There are no Mexican stamp, registration or similar taxes payable by a Foreign Holder in connection with the purchase, ownership or disposition of the Registered Securities. A Foreign Holder of the Registered Securities will not be liable for Mexican estate, succession, gift, inheritance or similar tax with respect to such securities.

United States Taxation

This summary of certain U.S. federal income tax considerations deals principally with persons that hold the Registered Securities as capital assets and whose functional currency is the U.S. dollar. As used in this section "Taxation," the term "United States Holder" means a beneficial owner of a Registered Security that is an individual who is a citizen or resident of the United States, a U.S. domestic corporation or any other person that is subject to U.S. federal income taxation on a net income basis in respect of its investment in the Registered Securities.

This summary does not purport to be a comprehensive description of all the tax considerations that may be relevant to any particular investor, including tax considerations that arise from rules of general application or that are assumed to be known to investors. This summary generally does not address the tax treatment of holders that may be subject to special tax rules, such as banks, insurance companies, tax-exempt organizations, dealers in securities or currencies, certain short-term holders of Registered Securities, traders in securities electing to mark-to-market, or persons that hedge their exposure in the Registered Securities or hold the Registered Securities as a position in a "straddle" for tax purposes or as part of a "synthetic security" or a "hedging" or "conversion" transaction or other integrated investment comprised of such Registered Securities and one or more other investments, nonresident aliens present in the United States for more than 182 days in a taxable year, U.S. expatriates, entities taxed as partnerships or the partners therein, persons that have a "functional currency" other than the U.S. dollar, nor does it address the tax treatment of holders that did not acquire the Registered Securities at their issue price as part of the initial distribution. Investors who purchased the Registered Securities at a price other than the issue price should consult their tax advisor as to the possible applicability to them of the amortizable bond premium or market discount rules.

In addition, this summary does not discuss the application of state, local, or foreign tax laws, U.S. federal estate or gift tax laws, the Medicare contribution tax on net investment income, the alternative minimum tax or special timing rules prescribed under section 451(b) of the United States Internal Revenue Code of 1986, as amended (the "Code"). United States Holders should consult their own tax advisers concerning the U.S. federal, state, local, foreign and other tax consequences of purchasing, owning, and disposing of a Registered Security in their particular circumstances.

Taxation of Interest and Additional Amounts. A United States Holder will treat the gross amount of interest and Additional Amounts (*i.e.*, without reduction for Mexican withholding taxes) as ordinary interest income in respect of the Registered Securities. Mexican withholding taxes paid at the appropriate rate applicable to the United States Holder will be treated as foreign income taxes eligible, subject to generally applicable limitations and conditions, for credit against such United States Holder's U.S. federal income tax liability, at the election of such United States Holder, or for deduction in computing such United States Holder's taxable income, provided that the United States Holder does not elect to claim a foreign tax credit for any foreign income taxes paid or accrued for the relevant taxable year. Interest and Additional Amounts will constitute income from sources without the United States and generally will be treated separately along with other items of "passive" income for purposes of determining the credit for foreign income taxes allowed under the Code.

The calculation and availability of foreign tax credits or deductions involves the application of rules that depend on a United States Holder's particular circumstances. United States Holders should consult their own tax advisors regarding the availability of foreign tax credits and the treatment of Additional Amounts.

Taxation of Dispositions. Upon the sale, exchange or retirement of a Registered Security, a United States Holder will generally recognize a gain or loss equal to the difference between the amount realized (less any amounts attributable to accrued and unpaid interest not previously includible in gross income, which will be taxable as ordinary income) and the holder's tax basis in such security, which is generally equal to the cost of the Registered Security to the United States Holder reduced by any payments on the Registered Security other than stated interest. Gain or loss recognized by a United States Holder on the sale, redemption or other disposition of the Registered Securities generally will be long-term capital gain or loss if, at the time of disposition, the securities have

been held for more than one year. Long-term capital gain realized by an individual United States Holder is generally taxed at lower rates than short-term capital gains or ordinary income. The deduction of capital losses is subject to limitations.

Where a Registered Security is issued at a discount from its principal amount, and the discount is less than the product of one-fourth of one percent (0.25 percent) of the principal amount of such Registered Security multiplied by the number of full years to maturity ("de minimis OID"), a United States Holder generally will include the de minimis OID in income as stated principal payments are made. The amount includible in income with respect to each principal payment equals the product of the total amount of de minimis OID on the Registered Security and a fraction, the numerator of which is the amount of the principal payment made and the denominator is the stated principal amount of the Registered Security. Any amount of de minimis OID included in income by a United States Holder is treated as gain recognized on the retirement of the Registered Security.

Backup Withholding and Information Reporting. Information returns may be filed with the Internal Revenue Service with respect to payments made to certain United States Holders of the Registered Securities. In addition, certain United States Holders may be subject to a backup withholding tax in respect of such payments, unless they (1) provide their accurate taxpayer identification numbers to the principal paying agent and certify that they are not subject to backup withholding or (2) otherwise establish an exemption from the backup withholding tax. Backup withholding is not an additional tax. Non-United States Holders may be required to comply with applicable certification procedures to establish that they are not United States Holders in order to avoid the application of such information reporting requirements and backup withholding tax. The amount of any backup withholding from a payment to a United States Holder or Non-United States Holder will be allowed as a credit against the holder's U.S. federal income tax liability and may entitle the holder to a refund, provided that the required information is timely furnished to the IRS.

Specified Foreign Financial Assets. Certain United States Holders that own "specified foreign financial assets" with an aggregate value in excess of U.S. $50,000 on the last day of the taxable year or U.S. $75,000 at any time during the taxable year are generally required to file an information statement along with their tax returns, currently on Form 8938, with respect to such assets. "Specified foreign financial assets" include any financial accounts held at a non-U.S. financial institution, as well as securities issued by a non-U.S. issuer (which would include the Registered Securities) that are not held in accounts maintained by financial institutions. Higher reporting thresholds apply to certain individuals living abroad and to certain married individuals. Regulations extend this reporting requirement to certain entities that are treated as formed or availed of to hold direct or indirect interests in specified foreign financial assets based on certain objective criteria. United States Holders who fail to report the required information could be subject to substantial penalties. In addition, the statute of limitations for assessment of tax would be suspended, in whole or part. Prospective investors should consult their own tax advisors concerning the application of these rules to their investment in the Registered Securities, including the application of the rules to their particular circumstances.

Documents on Display

We are subject to the information requirements of the Exchange Act. In accordance with these requirements, we file reports, including annual reports on Form 20-F, and other information with the SEC. Any filings we make electronically with the SEC will be available to the public over the Internet at the SEC's website at http://www.sec.gov. We maintain an Internet site at the following location: http://www.pemex.com (this website address is for information only and is not intended to be an active link or to incorporate any website information into this annual report).

Item 11. Quantitative and Qualitative Disclosures About Market Risk

QUALITATIVE DISCLOSURE

Policies for Risk Management and the Use of Derivative Financial Instruments

We face market risk caused by the volatility of hydrocarbon prices, exchange rates and interest rates, credit risk associated with investments and financial derivatives, as well as liquidity risk. In order to monitor and manage these risks, we have approved general provisions relating to financial risk management, which are comprised of policies and guidelines that promote an integrated framework for risk management, regulate the use of Derivative Financial Instruments ("DFIs"), and guide the development of risk mitigation strategies.

This regulatory framework establishes that DFIs should be used only for the purpose of mitigating financial risk. The use of DFIs for any other purpose must be approved in accordance with our current internal regulation. We have a Financial Risk Working Group ("FRWG") which is a specialized working group with decision-making authority on financial risk exposure, financial risk mitigation schemes, and DFIs trading of Petróleos Mexicanos, the subsidiary entities, and where applicable, the subsidiary companies.

Approved DFIs are mainly traded on the over-the-counter ("OTC") market; however, exchange traded instruments may also be used. In the case of PMI Trading, DFIs are traded on CME Clearport.

The different types of DFIs that we trade are described below in the subsections corresponding to each risk type and as related to the applicable trading markets. See Note 18 to our consolidated financial statements included herein.

One of our policies is to contribute to minimizing the impact that unfavorable changes in financial risk factors have on our financial results by promoting an adequate balance between incoming cash flows from operations and outgoing cash flows related to our liabilities.

As part of the regulatory framework for financial risk management, we have established the eligible counterparties with which we may trade DFIs and other financial instruments.

In addition, certain PMI Subsidiaries have implemented a regulatory framework for risk management with respect to its activities, which consists of policies, guidelines and procedures to manage the market risk associated with its commodity trading activities in accordance with industry best practices, such as: (1) the use of DFIs for financial risk mitigation purposes; (2) the segregation of duties; (3) valuation and monitoring mechanisms, such as the generation of a daily portfolio risk report, value at risk ("VaR") computation; and (4) VaR limits, both at a global and business unit level and the implementation of stop loss mechanisms.

Given that the outstanding DFIs of Petróleos Mexicanos have been entered into for risk mitigation purposes, particularly with economic hedging purposes, there is no need to establish and monitor market risk limits.

For those portfolios with an open market risk exposure, our financial risk management regulatory framework establishes the implementation and monitoring of market risk metrics and limits (such as VaR, among others).

We have also established credit guidelines for DFIs that Pemex Industrial Transformation offers to its domestic customers, which include the use of guarantees and credit lines. For exchange traded DFIs, we trade under the margin requirements of the corresponding exchange market, and therefore, do not have internal policies for these DFIs.

DFIs held with financial counterparties do not require collateral exchange clauses. Notwithstanding, our regulatory framework promotes credit risk mitigation strategies such as collateral exchange.

We do not have an independent third party to verify compliance with these internal standards; however, we have internal control procedures that certify compliance with existing policies and guidelines.

Description about Valuation Techniques

Fair Value of DFIs

We periodically evaluate our exposure to international hydrocarbon prices, interest rates and foreign currencies and use derivative instruments as a mitigation mechanism when potential sources of market risk are identified.

We monitor the fair value of our DFI portfolio on a periodic basis. The fair value represents the price at which one party would assume the rights and obligations of the other, and is calculated for DFIs through models commonly used in the international financial markets, based on inputs obtained from major market information systems and price providers. Therefore, we do not have an independent third party to value our DFIs.

We calculate the fair value of our DFIs through the tools developed by our market information providers, and through valuation models implemented in software packages used to integrate all of our business areas and accounting, such as System Applications Products ("SAP").

Our DFI portfolio is composed primarily of swaps, for which fair value, or Mark-to-Market ("MtM"), is estimated by projecting future cash flows and discounting them with the corresponding discount factor; for currency and interest rate options, this is done through the Black and Scholes model, and for crude oil options, through the Levy model for Asian options.

According to IFRS 13 "Fair Value Measurement", the MtM value of DFIs must reflect the creditworthiness of the parties. Consequently, the fair value of a DFI takes into account the risk that either party may default on its obligation. Due to the above, we apply the credit value adjustment ("CVA") method to calculate the fair value of our DFIs.

Given that our hedges are cash flow hedges, their effectiveness is preserved regardless of variations in the underlying assets or reference variables since over time asset flows are offset by liabilities flows. Therefore, it is not necessary to measure or monitor the hedges' effectiveness.

Fair value hierarchy

We value our DFIs using standard methodologies commonly applied in the financial markets. The fair-value assumptions and inputs utilized are classified in the three levels of the fair value hierarchy for market participant assumptions, as described below.

The fair values determined by Level 1 inputs utilize quoted prices in financial markets for identical assets or liabilities. Fair values determined by Level 2 inputs are based on quoted prices for similar assets or liabilities in financial markets, and inputs other than quoted prices that are observed for assets or liabilities. Level 3 inputs are unobservable inputs for the assets or liabilities, and include situations where there is little, if any, market activity for the assets or liabilities. Management uses appropriate valuation techniques based on the available inputs to measure the fair values of our applicable assets and liabilities.

When available, we measure fair value using Level 1 inputs, because they generally provide the most reliable evidence of fair value.

The fair-value assumptions and inputs utilized in the valuation of our DFIs' fair value, fall under Level 2 of the fair value hierarchy.

Liquidity Sources

Liquidity Risk

Our main internal source of liquidity comes from our operations. Additionally, through our debt planning and the purchase and sale of U.S. dollars, we currently preserve a cash balance at a level of liquidity in domestic currency and U.S. dollars that is considered adequate to cover our investment and operating expenses, as well as other payment obligations, such as those related to DFIs.

In addition, as of December 31, 2021, we have acquired committed revolving credit lines in order to mitigate liquidity risk, two of which provide access to Ps. 28,000 million and Ps. 9,000 million with expiration dates in November 2022 and November 2023, respectively; and another that provides access to U.S. $5,500 million with an expiration date in June 2024.

During 2021, we entered into FX Forwards MXN/USD in order to preserve an adequate level of liquidity in U.S. dollars. As of December 31, 2021, the aggregate notional amount of these DFIs was U.S. $600 million.

Finally, the investment strategies of our portfolios are structured by selecting time horizons that consider each currency's cash flow requirements in order to preserve liquidity.

Certain PMI Subsidiaries mitigate their liquidity risk through several mechanisms, the most important of which is our centralized treasury, which provides access to two syndicated credit facilities for up to U.S. $664 million and U.S. $1,500 million (the latter was transferred from Petróleos Mexicanos to PMI during December 2020) and cash surplus capacity in the custody of the centralized structure. In addition, certain PMI Subsidiaries have access to bilateral credit lines from financial institutions for up to U.S. $180 million.

These companies monitor their cash flow on a daily basis and protect their creditworthiness in the financial markets. Liquidity risk is mitigated by monitoring certain financial ratios as set forth in the policies approved by each company's board of directors.

Changes in Exposure to Main Risks

Market Risk

(i) Interest Rate Risk

We are exposed to fluctuations in floating interest rate liabilities. We are exposed to U.S. dollar LIBOR and to Mexican peso TIIE. As of December 31, 2021, 19.2% of our total net debt outstanding (including DFIs) consisted of floating rate debt.

Moreover, we invest in pesos and U.S. dollars in compliance with applicable internal regulations, through portfolios that have different purposes that seek an adequate return subject to risk parameters that reduce the probability of capital losses. The objective of the investments made through these portfolios is to meet our obligations payable in pesos and U.S. dollars.

The investments made through our portfolios are exposed to domestic and international interest rate risk and credit spread risk derived from government and corporate securities, and inflation risk arising from the relationship between UDIs (*Unidades de Inversión*) and pesos. However, these risks are mitigated by established limits on exposure to market risk.

Interest Rate Swaps

Occasionally, for strategic reasons or in order to offset the expected inflows and outflows, we have entered into interest rate swaps and options. Through the swap agreements, we become obligated to make payments based on a fixed interest rate in exchange for receiving payments referenced to a floating interest rate. On the other hand, under the option agreements, we acquire protection against possible increases in the floating interest rates of some of our liabilities.

As of December 31, 2021, we were a party to four interest rate swap agreements denominated in U.S. dollars for an aggregate notional amount of U.S. $733.7 million at a weighted average fixed interest rate of 2.34% and a weighted average term of 3.4 years.

Similarly, in order to eliminate the volatility associated with variable interest rates of long-term financing operations, PMI NASA has also executed three interest rate swap agreements denominated in U.S. dollars for an aggregate notional amount of U.S. $9.8 million, at a weighted average fixed interest rate of 3.80% and a weighted average term of 0.76 years.

IBOR reference rates transition

As a result of the decision made by the Financial Stability Board (FSB), the Interbank Offered Rates (IBORs), such as the LIBOR in dollars (overnight "O/N", one week "1W", two months "2M" and twelve months "12M") or the EURIBOR in Euros, are expected to cease to be published in 2022 and are expected to be replaced by alternative reference rates, based on risk-free rates obtained from market operations.

The discontinuation of the publication of these rates was originally scheduled for December 2021. Nevertheless, on November 2020, the ICE Benchmark Administration Limited ("ICE") announced an extension until June 2023 for the publication of the most common LIBOR rates in dollars (overnight "O/N", one month "1M", three months "3M", six months "6M" and twelve months "12M").

Therefore, we have identified and we are reviewing contracts expiring after the applicable cessation dates that could be impacted by the change in the aforementioned rates.

We have a reduced number of financial instruments referenced to floating rates in Euros and U.S. dollars with maturity and interest rate fixation after December 2021 and June 2023, respectively. This portfolio of financial instruments is composed of debt instruments and DFIs as shown below:

	Reference Rate	****Notional Amount As of December 31, 2021 (in millions of each currency)***
Debt	LIBOR 1M USD	3,212
	LIBOR 3M USD	510
	LIBOR 6M USD	824
	EURIBOR 3M EUR	650
DFI	LIBOR 1M USD	2,500
	LIBOR 3M USD	156
	LIBOR 6M USD	244

* Note: Notional amounts with maturity after December 31, 2021, for Euros and after June 30, 2023, for U.S. dollars.

In the event that TIIE ceases to be published, the portfolio of financial instruments referenced to these floating rates is composed of debt instruments and DFIs as shown below:

	Reference Rate	**Notional Amount As of December 31, 2021 (in millions of each currency)*
Debt	TIIE 28D MXN	6,115
	TIIE 91D MXN	24,756
DFI	TIIE 28D MXN	30,513

* Note: Notional amounts with maturity after December 31, 2021.

Our portfolio also consists of additional debt instruments and DFIs referenced at fixed rates, which are not listed in the tables above since our fixed rate portfolio will not be impacted by the IBOR transition.

Currently, we have been in constant communication with our counterparties in order to carry out this transition in the most efficient way possible. In addition, as a result of the transition, we are working on any amendments to our contracts that may be required and are monitoring the evolution of the IBORs transition in the market in order to anticipate any negative impact that these changes may have.

Once the alternative reference rates are defined, as well as the new discount curves and any other valuation parameters, we will be able to estimate the impact that such changes will have on financial instruments' market value and financial cost.

As of the fourth quarter of 2021, as a result of the transition to the alternative reference rates based on risk-free rates ("RFR"), we have adopted the policy of not entering into new DFIs referenced to IBOR rates. Additionally, some of the discount curves that we use to obtain the fair value of our DFIs already reflect the corresponding new RFR.

As a result of our policy of not contracting new financing operations at floating rates linked to IBOR, during 2021, we contracted financing operations in USD at floating rates, linked to RFR rates.

The credit agreements of PMI Trading included flexible provisions that would help make an orderly transition to an alternative rate in the event that the LIBOR rates cease to be published prematurely. Currently, PMI Trading's negotiations to adopt the new benchmark rate have concluded and PMI Trading is now able to use LIBOR until its definitive conclusion. PMI Trading will then continue with the new benchmark known as SOFR whenever required.

(ii) Exchange Rate Risk

Most of our revenues are denominated in U.S. dollars, a significant amount of which is derived from exports of crude oil and petroleum products, which are priced and payable in U.S. dollars. Additionally, our revenues from domestic sales of gasoline and diesel net of IEPS Tax, tax duties, incentives, and other related taxes, as well as domestic sales of natural gas and its byproducts, LPG and petrochemicals, are referenced to international U.S. dollar-denominated prices.

Our expenses related to hydrocarbon duties are calculated based on international U.S. dollar-denominated prices and the cost of hydrocarbon imports that we acquire for resale in Mexico or use in our facilities are indexed to international U.S. dollar-denominated prices. By contrast, our capital expenditure and operating expenses are established in pesos.

As a result of this cash flow structure, the depreciation of the peso against the U.S. dollar increases our financial balance. The appreciation of the peso relative to the U.S. dollar has the opposite effect. We manage this risk without the need for hedging instruments, because the impact on our revenues of fluctuations in the exchange rate between the U.S. dollar and the peso is offset in whole or in part by its impact on our obligations.

Cross-Currency Swaps

We prioritize debt issuances denominated in U.S. dollars; nonetheless, this is not always achievable, hence non-U.S. dollar denominated debt issued in international currencies is hedged through DFIs to mitigate its exchange rate exposure, either by swapping it into U.S. dollars or through other derivative structures. The rest of the debt is denominated in pesos or in UDIs and for the debt denominated in UDIs, it has been converted into pesos through DFIs in order to eliminate the inflationary risk exposure.

As a consequence of the above, our debt issued in international currencies other than U.S. dollars has exchange rate risk mitigation strategies. We have selected strategies that further seek to reduce our cost of funding by leaving, in some cases, part of this exchange rate exposure unhedged when assessed as appropriate.

The underlying currencies of our DFIs are the euro, Swiss franc, Japanese yen and pounds sterling against the U.S. dollar and UDIs against the peso.

As of December 31, 2021, we did not enter into any DFIs, as no debt in currencies other than U.S. dollars or pesos was issued.

Nonetheless, during 2021, we carried out the restructure of five cross-currency swaps, two of which included a recouponing clause. These DFIs hedged the exchange rate exposure of a €1,000 million debt with maturity in 2026, a €100 million debt with maturity in 2030 and 10% of a €1,250 million debt with maturity in 2027. As part of this restructuring, we replaced the existing cross-currency swaps with two new instruments, without incurring additional cost. The two new instruments consisted of a new cross-currency swap and the sale of a call option, which guaranteed complete protection up to a certain exchange rate and partial protection above that level. These DFIs maintained the original contractual clauses. Once this restructure was carried out, 25% of the issue with maturity in 2026 remained hedged with two cross-currency swaps.

Additionally, during 2020, we carried out the restructure of three cross-currency swaps, one of which had a recouponing provision. These DFIs hedged the exchange rate exposure of a €1,250 million debt with maturity in 2027. For this restructure, we entered into, without cost, structures which are composed of a cross-currency swap and the sale of a call option, guaranteeing complete protection up to a certain exchange rate and partial protection above that level. This allowed us to eliminate the recouponing provision without cost.

During 2019, we carried out the restructure of a cross-currency swap which had a recouponing provision. This DFI hedged the exchange rate exposure of a €725 million debt with maturity in 2025. For this restructure we entered into, without cost, three options structures called “Seagull Options” to hedge the same notional risk as the original swap. These structures protect the short exposure in euros against an appreciation of the euro versus the U.S. dollar in a specific range and result in a benefit if the euro depreciates up to a certain exchange rate. Additionally, in order to mitigate the exchange rate risk derived from the coupons, we entered into only coupon swaps for the same notional amount. These allowed to eliminate the recouponing provision without cost.

We recorded a total net foreign exchange (loss) gain of Ps. (45,675.0) million, Ps. (128,949.3) million and Ps. 86,930.4 million, for the years ended December 31, 2021, 2020 and 2019, respectively. These amounts include the unrealized foreign exchange gain (loss) associated with debt of Ps. (40,751.3) million, Ps. (122,099.1) million and Ps. 75,967.4 million for the years ended December 31, 2021, 2020 and 2019, respectively. Unrealized foreign exchange gains and losses do not impact our cash flows. The depreciation of the peso during 2021 caused a total net foreign exchange loss because a significant part of our debt, 87.19% (principal only) as of December 31, 2021, is denominated in foreign currency. Due to the cash flow structure described above, the depreciation of the peso relative to the U.S. dollar does not affect our ability to meet U.S. dollar-denominated financial obligations and it improves our ability to meet peso-denominated financial obligations. On the other hand, the appreciation of the peso relative to the U.S. dollar may increase our peso-denominated debt service costs on a U.S. dollar basis.

Certain of the PMI Subsidiaries face market risks generated by fluctuations in foreign exchange rates. In order to mitigate these risks, the boards of directors of several of these companies have authorized a policy which stipulates that financial assets must be denominated in our functional currency, unless the company owes a duty or expected payment in a currency other than our functional one.

Finally, a significant amount of PMI Trading’s income and expenses, including the cost of sales and related sales costs, is derived from the trade of refined products, petrochemicals and gas liquids to our subsidiaries and third parties, whose prices are determined and are payable in U.S. dollars. PMI Trading’s exposure to foreign currency risk results primarily from the need to fund tax payments denominated in domestic currency, as well as from certain related sales costs denominated in domestic currency.

PMI Trading believes it can adequately manage the risk created by the payment of taxes in domestic currency without the need to enter into hedging instruments because the exposure to this risk is marginal relative to the total flows of U.S. dollar. In addition, in the event that a potential foreign exchange risk arises in connection with a commercial transaction, PMI Trading may implement risk mitigation measures by entering into DFIs.

(iii) Hydrocarbon Price Risk

We periodically assess our revenues and expenditures structure in order to identify the main market risk factors that our cash flows are exposed to in connection with international hydrocarbon prices. Based on this assessment, we monitor our exposure to the most significant risk factors and quantify their impact on our financial balance.

Our exports and domestic sales are directly or indirectly related to international hydrocarbon prices. Therefore, we are exposed to fluctuations in these prices. In terms of crude oil and natural gas, part of this risk is transferred to the Mexican Government under our current fiscal regime.

Our exposure to hydrocarbon prices is partly mitigated by natural hedges between our inflows and outflows.

Additionally, we continuously evaluate the implementation of risk mitigation strategies, including those involving the use of DFIs, taking into consideration their operative and budgetary feasibility.

Commodity Derivatives

In 2017, the Board of Directors of Petróleos Mexicanos approved the establishment of the *Programa Anual de Coberturas Petroleras* (Annual Oil Hedging Program). Since then, we have implemented hedging strategies to partially protect our cash flows from falls in the Mexican crude oil basket price below the one established in the Federal Revenue Law.

During 2019, we entered into a crude oil hedge for fiscal year 2020, pursuant to which we hedged 243 thousand barrels per day for the period between December 2019 and December 2020, for U.S. $178.3 million.

Afterwards, during 2020, we entered into a crude oil hedge for the first half of fiscal year 2021, pursuant to which we hedged 332.5 thousand barrels per day for the period between December 2020 and June 2021, for U.S. $119.9 million.

During the first half of 2021, we entered into a crude oil hedge for the second half of fiscal year 2021, pursuant to which we hedged 218 thousand barrels per day on average, for the period between July 2021 and December 2021, for U.S. $39.4 million.

Finally, during the second half of 2021, we began with the crude oil hedge for fiscal year 2022. As of December 31, 2021, we had hedged 155 thousand barrels per day for the period between January 2022 and December 2022, for U.S. $95.2 million, which represents 53% of the crude oil hedge for fiscal year 2022.

In addition to supplying natural gas, Pemex Industrial Transformation can offer DFIs to its domestic customers in order to provide them with support to mitigate the risk associated with the volatility of natural gas prices.

Since 2017, when this service is offered, Pemex Industrial Transformation must enter into DFIs with Petróleos Mexicanos under the opposite position to those DFIs offered to our customers in order to mitigate the market risk it would bear under such offered DFIs. Petróleos Mexicanos then transfers the related price risk derived from the DFI position held with Pemex Industrial Transformation to financial counterparties by entering into these opposite position DFIs with such parties. As of December 31, 2021, there were no DFIs since all the DFIs of its portfolios expired in 2019. In case of entering into new trades, Pemex Industrial Transformation DFI portfolios have VaR and CaR limits in order to limit market risk exposure.

PMI Trading faces market risk generated by the terms of the purchase and sale of refined products and natural gas liquids, as well as the volatility of oil prices. Accordingly, it frequently enters into DFIs in order to mitigate this risk, thereby reducing the volatility of its financial results.

In accordance with the risk management regulatory framework that PMI Trading has implemented, VaR and the change in profit and loss by portfolio are calculated daily and compared to the maximum applicable limits in order to implement risk mitigation mechanisms as necessary.

Counterparty or Credit Risk

When the fair value of a DFI is favorable to us, we face the risk that the counterparty will not be able to meet its obligations. We monitor our counterparties' creditworthiness and calculate the credit risk exposure for our DFIs. As a risk mitigation strategy, we only enter into DFIs with major financial institutions with a minimum credit rating of BBB-. These ratings are issued and revised periodically by risk rating agencies. Furthermore, we seek to maintain a diversified portfolio of counterparties.

In order to estimate our credit risk exposure to each financial counterparty, the potential future exposure is calculated by projecting the risk factors used in the valuation of each DFI in order to estimate the MtM value for different periods, taking into account any credit risk mitigation provisions.

Moreover, we have entered into various long-term cross-currency swaps agreements with "recouponing" provisions (pursuant to which the payments on the swaps are adjusted when the MtM exceeds the relevant threshold specified in the swap), thereby limiting

the exposure to our counterparties to a specific threshold amount, as well as the counterparties' exposure to us. The specified thresholds were reached in one cross-currency swap during 2021, which was used to hedge the exchange rate exposure to the pounds sterling, and in five cross-currency swaps during 2020, which were used to hedge the exchange rate exposure to the euro and to the pounds sterling.

This resulted in the cash settlement of such swaps and the resetting of swap terms to return their MtM value to zero. During 2021, we did not enter into any new cross-currency swap with these characteristics.

According to IFRS 13 "Fair Value Measurement," the MtM of DFIs must reflect the creditworthiness of the parties. Consequently, the fair value of a DFI takes into account the risk that either party may default on its obligation. Due to the above, we apply the CVA method to calculate the fair value of our DFIs.

For each DFI, the CVA is calculated by determining the difference between the MtM and the estimated MtM adjusted for credit risk. In determining the credit risk, the CVA method takes into account the current market perception about the credit risk of both counterparties, using the following inputs: (a) the MtM projection for each payment date based on forward yield curves; (b) the implied default probability obtained from both our and the counterparty's credit default swaps, at each payment date; and (c) the default recovery rates of each counterparty.

Furthermore, by means of its credit guidelines for DFI operations, Pemex Industrial Transformation significantly reduces its credit risk exposure related to the DFIs.

In order to qualify for these DFIs, Pemex Industrial Transformation's customers must be party to a current natural gas supply contract and sign a domestic master derivative agreement.

Additionally, according to the credit guidelines, DFIs with these customers must be initially secured by cash deposits, letters of credit or other collateral provisions, as required. The credit guidelines indicate that Pemex Industrial Transformation may offer DFIs with an exemption from collateral requirements up to certain amount, through a credit line approved by the credit committee, based on an internal financial and credit assessment. Moreover, if the credit line is insufficient to cover each client's exposure, the client is obligated to deposit collateral.

In accordance with these guidelines, in the event that a client does not meet our payment obligations, DFIs related to this client would be terminated, rights to any available collateral would be exercised and, if the collateral were insufficient to cover the fair value, or in the absence of collateral, natural gas supply would be suspended until the payment is made.

As of December 31, 2021, Pemex Industrial Transformation had no DFIs since all the DFIs of its portfolios expired in 2019. As such, once the total settlement of the operations was carried out, the exempt credit lines expired, and the guarantees deposited by the clients were entirely returned.

PMI Trading's credit risk associated with DFI transactions is mitigated through the use of futures and standardized instruments that are cleared through CME Clearport.

Accounting Standards Applied and the Impact on Results

We enter into derivatives transactions with the sole purpose of hedging financial risks related to our operations, firm commitments, planned transactions and assets and liabilities recorded on our statement of financial position. Nonetheless, some of these transactions do not qualify for hedge accounting treatment because they do not meet the requirements of the accounting standards for designation as hedges. They are therefore recorded in the consolidated financial statements as instruments entered into for trading purposes, despite the fact that their cash flows are offset by the cash flows of the positions (assets or liabilities) to which they relate. As a result, the changes in their fair value are recognized in the "Derivative financial instruments (cost) income, net" line item in the consolidated statement of comprehensive income.

As of December 31, 2021 and 2020, the net fair value of our DFIs (including both DFIs that have not reached maturity and those that have reached maturity but have not been settled), recognized in our consolidated statement of financial position, was Ps. (1,162.1) million and Ps. 16,630.0 million, respectively. As of December 31, 2021, and 2020, we did not have any DFIs designated as hedges. See Note 18 to our consolidated financial statements included herein.

For the years ended December 31, 2021, 2020 and 2019, we recognized a net (loss) gain of Ps. (25,224.2) million, Ps. 17,096.1 million and Ps. (23,263.9) million, respectively, in the "Derivative financial instruments (cost) income, net" line item with respect to DFIs treated as instruments entered into for trading purposes.

In accordance with established accounting policies, we have analyzed the different contracts that we have entered into and have determined that according to the terms thereof none of these agreements meet the criteria to be classified as embedded derivatives. Accordingly, as of December 31, 2021, and 2020, we did not recognize any embedded derivatives (foreign currency or index).

QUANTITATIVE DISCLOSURE

Fair Value

The following tables show our cash flow maturities as well as the fair value of our debt and DFI portfolios as of December 31, 2021. It should be noted that:

- For debt obligations, these tables present principal cash flow and the weighted average interest rates for fixed rate debt.
- For interest rate swaps, interest rate options, cross-currency swaps and currency options, these tables present notional amounts and weighted average interest rates by expected (contractual) maturity dates.
- Weighted average variable rates are based on implied forward rates obtained from the interbank market yield curve at the reporting date.
- For crude oil, volumes are presented in millions of barrels, and fixed average and strike prices are presented in U.S. dollars per barrel.
- DFIs' fair value includes CVA and is calculated based on market quotes obtained from market sources such as Bloomberg, Proveedor Integral de Precios, S.A. de C.V. ("PIP"), among others.
- For PMI Trading, the prices used in commercial transactions and DFIs are published by reputable sources that are widely used in international markets, such as CME-NYMEX, Platts and Argus, among others.
- Fair value is calculated internally, either by discounting cash flows with the corresponding zero-coupon yield curve in the original currency, or through other standard methodologies commonly used in financial markets for specific instruments.
- For all instruments, the tables are based on the contract terms in order to determine the future cash flows that are categorized by expected maturity dates.

Quantitative Disclosure of Debt Cash Flow Maturities as of December 31, 2021[1] [2] [3]

	Year of expected maturity date							
	2022	2023	2024	2025	2026	2027 Thereafter	Total Carrying Value	Fair Value
Liabilities								
Outstanding debt								
Fixed rate (U.S. dollars)	Ps. 37,913,852	Ps. 50,307,730	Ps. 23,079,032	Ps. 36,124,005	Ps. 78,925,073	Ps. 1,032,384,964	Ps. 1,258,734,656	Ps 1,294,291,227
Average interest rate (%)	—	—	—	—	—	—	6.48%	
Fixed rate (Japanese yen)	—	5,367,000	—	—	14,296,527	—	19,663,527	18,454,292
Average interest rate (%)	—	—	—	—	—	—	1.35%	
Fixed rate (pounds sterling)	9,753,906	—	—	12,508,863	—	—	22,262,769	23,002,138
Average interest rate (%)	—	—	—	—	—	—	5.72%	
Fixed rate (pesos)	85,401,120	—	57,280,273	—	31,048,584	—	173,729,977	171,407,986
Average interest rate (%)	—	—	—	—	—	—	7.89%	
Fixed rate (UDIs)	—	—	—	—	22,428,519	13,026,170	35,454,688	35,287,367
Average interest rate (%)	—	—	—	—	—	—	4.09%	
Fixed rate (euros)	37,384,961	32,746,388	29,205,234	38,593,629	23,400,183	89,686,575	251,016,970	260,931,866
Average interest rate (%)	—	—	—	—	—	—	3.98%	
Fixed rate (Swiss francs)	—	8,240,281	—	—	—	—	8,240,281	8,302,575
Average interest rate (%)	—	—	—	—	—	—	1.75%	
Fixed rate (Australian dollars)	—	—	—	—	—	—	—	—
Average interest rate (%)	—	—	—	—	—	—	—	
Total fixed rate debt	**170,453,838**	**96,661,399**	**109,564,539**	**87,226,497**	**170,098,886**	**1,135,097,709**	**1,769,102,868**	**1,811,677,451**
Variable rate (U.S. dollars)	200,020,654	34,147,302	61,710,357	6,949,574	3,382,861	12,306,214	318,516,962	274,925,000
Variable rate (Japanese yen)	—	—	—	—	—	—	—	—
Variable rate (euros)	—	15,214,474	—	—	—	—	15,214,474	15,241,361
Variable rate (pesos)	84,470,650	7,029,082	10,790,839	6,907,513	206,075	118,960	109,523,119	109,857,819
Total variable rate debt	**284,491,304**	**56,390,858**	**72,501,196**	**13,857,087**	**3,588,936**	**12,425,174**	**443,254,555**	**400,024,180**
Total debt	**Ps. 454,945,142**	**Ps. 153,052,257**	**Ps. 182,065,735**	**Ps. 101,083,584**	**Ps. 173,687,822**	**Ps. 1,147,522,883**	**Ps. 2,212,357,423**	**Ps. 2,211,701,630**

Note: Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates at December 31, 2021, of: Ps. 20.5835 = U.S. $1.00; Ps. 0.1789 = 1.00 Japanese yen; Ps. 27.8834 = 1.00 pound sterling; Ps. 7.108233 = 1.00 UDI; Ps. 23.4086 = 1.00 euro; and Ps. 22.5924 = 1.00 Swiss franc.

(2) Amounts in thousands of Mexican pesos.

(3) The amounts shown do not include accrued interest.

Quantitative Disclosure of Cash Flow Maturities from Derivative Financial Instruments Held or Issued for Purposes Other than Trading as of December 31, 2021[1][2]

	Year of expected maturity date							
	2022	2023	2024	2025	2026	2027 Thereafter	Total Carrying Value	Fair Value [3]
Hedging Instruments								
Interest Rate DFI [2][4]								
Interest Rate Swaps (U.S. dollars)								
Variable to fixed	Ps. 4,754,104	Ps. 4,608,186	Ps. 3,422,007	Ps. 2,521,479	—	—	Ps. 15,305,775	Ps. (263,340)
Average pay rate	2.43%	2.37%	2.35%	2.31%	0.00%	0.00%	n.a.	n.a.
Average receive rate	0.86%	1.65%	2.12%	2.26%	0.00%	0.00%	n.a.	n.a.
Interest Rate Options								
Buy Cap, Sell Floor on floating in U.S. dollar LIBOR 1M	—	—	51,458,750	—	—	—	51,458,750	(323,852)
Currency DFI								
Cross-currency Swaps								
Receive euros/Pay U.S. dollars	36,728,355	48,031,582	27,410,532	40,585,768	23,338,421	87,687,261	263,781,921	(4,217,800)
Receive Japanese yen / Pay U.S. dollars	—	4,967,860	—	—	—	—	4,967,860	70,651
Receive pounds sterling / Pay U.S. dollars	10,327,298	—	—	12,178,434	—	—	22,505,731	(94,957)
Receive UDI/ Pay pesos	—	—	—	3,063,181	17,076,001	10,374,031	30,513,214	6,159,382
Receive Swiss francs/ Pay U.S. dollars	—	7,512,978	—	—	—	—	7,512,978	524,471
Currency Options								
Buy Put, Sell Put and Sell Call on Japanese yen	—	—	—	—	14,308,629	—	14,308,629	(206,526)
Buy Call, Sell Call and Sell Put on euros	—	—	29,253,527	16,967,046	—	29,253,527	75,474,101	(1,398,532)
Sell Call on pounds sterling	—	—	—	12,534,024	—	—	12,534,024	(27,896)
Sell Call on Swiss francs	—	8,229,792	—	—	—	—	8,229,792	(12,202)
Sell Call on Euros	14,041,693	15,211,834	—	15,211,834	17,552,116	60,847,337	122,864,815	(917,025)
FX Forwards								
Receive U.S. dollars / Pay pesos	12,340,413	—	—	—	—	—	12,340,413	3,575

n.a. = not applicable.

Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates at December 31, 2021, of: Ps. 20.5835 = U.S. $1.00 and Ps. 23.4086 = 1.00 euro.

(2) Our management uses these DFIs to hedge market risk; however, these DFIs do not qualify for accounting purposes as hedges and are recorded in the financial statements as entered into for trading purposes.

(3) Positive numbers represent a favorable fair value to us.

(4) PMI's risk management policies and procedures establish that DFIs should be used only for hedging purposes; however, DFIs are not recorded as hedges for accounting purposes.

Quantitative Disclosure of Cash Flow Maturities from Derivative Financial Instruments (Petroleum Products) Held or Issued for Purposes other than Trading as of December 31, 2021[1]

	2022	2023	2024	2025	2026	2027 Thereafter	Total Volume	Fair Value [2]
	(in thousands of barrels)							(in thousands of nominal pesos)
Hedging Instruments								
Exchange-traded futures[3][5]	(0.61)	—	—	—	—	—	(0.61)	(4,677)
Exchange-traded swaps[4][5]	(2.31)	—	—	—	—	—	(2.31)	(28,389)

Note: Numbers may not total due to rounding.

(1) The information in this table has been calculated using the exchange rate at December 31, 2021 of: Ps. 20.5835 = U.S. $1.00

(2) Positive numbers represent a favorable fair value to PMI Trading.

(3) Net position.

(4) Swaps registered in CME Clearport are included in these figures.

(5) The balance of these financial instruments is recognized as cash and cash equivalents. PMI Trading considered these financial assets to be fully liquid.

Sensitivity Analysis

We have entered into DFIs with the purpose to mitigate the market risk for specific flows or predetermined volumes associated with our operations. Our DFIs have the same characteristics (e.g. underlying assets, payment dates, amounts, or volumes) as the hedged position, but with the opposite exposure to the market risk factors. As a result of these mitigation strategies, we have a minor sensitivity to the hedged market risk factors. See Note 18 from our consolidated financial statements included herein.

Given that our hedges are cash flow hedges, their effectiveness is preserved regardless of variations in the underlying assets or reference variables since, over time, asset flows are offset by liabilities flows. Therefore, it is not considered necessary to measure the hedge's effectiveness or to monitor them.

Natural gas DFIs that Pemex Industrial Transformation has offered to its domestic customers have been reported as transactions with trading purposes. However, such operations were fully compensated by the operations entered into with financial counterparties, maintaining a negligible or even null exposure to market risk (due to this back-to-back mechanism). As of December 31, 2021, Pemex Industrial Transformation did not have any DFI to report, since all the DFIs of our portfolios expired in 2019. As such, it is not necessary to conduct either a sensitivity analysis or to measure or monitor the hedge effectiveness.

Other DFIs seek to hedge the changes in the price of the commercialized products, such that the DFIs' underlying assets have correlations with the prices of the products involved in commercialization. PMI Trading estimates the VaR of these DFIs. Notably, DFIs of PMI Trading (all of them related to petroleum derivatives), are classified under cash and cash equivalents for accounting purposes due to their liquidity.

Item 12. Description of Securities Other than Equity Securities

Not applicable.

PART II

Item 13. Defaults, Dividend Arrearages and Delinquencies

None.

Item 14. Material Modifications to the Rights of Security Holders and Use of Proceeds

None.

Item 15. Controls and Procedures

(a) Disclosure Controls and Procedures

We carried out an evaluation under the supervision and with the participation of our management, including our *Director General* (Chief Executive Officer or CEO) and our *Director Corporativo de Finanzas* (Chief Financial Officer or CFO), of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act) as of December 31, 2021. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, effective disclosure controls and procedures can provide only reasonable assurance of achieving their control objectives.

Based upon our evaluation, and due to the material weakness in internal control over financial reporting as described below, our CEO and CFO concluded that our disclosure controls and procedures as of December 31, 2021 were not effective to provide reasonable assurance that information required to be disclosed in the reports we file and submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosures.

(b) Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act). Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS. Our internal control over financial reporting includes those policies and procedures that:

1. Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
2. Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with IFRS and with Item 18 of Form 20-F, and that our receipts and expenditures are being made only in accordance with authorizations of management and directors of the relevant entity; and
3. Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness for future periods are subject to the risk that the related controls may become inadequate because of changes in conditions, or that the degree of compliance with policies or procedures may deteriorate.

Our management, with participation of the CEO and CFO, under the oversight of our Board of Directors, evaluated the effectiveness of our internal control over financial reporting as of December 31, 2021 using the framework in Internal Control—Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on that evaluation, management concluded that our internal control over financial reporting was not effective as of December 31, 2021 due to the material weakness in internal control over financial reporting described below.

Our management concluded that, as of December 31, 2020, there was a material weakness in our internal control over financial reporting related to the estimation of impairment of long-lived assets. Specifically, the review controls over the application of key inputs used to measure impairment were not designed with a sufficient degree of precision, and there were no adequate controls early in the process, to effectively identify errors in the impairment assessment and determine that the calculation of the value in use for the cash-generating units complies with IAS-36. This was due to insufficient knowledge and experience of our staff responsible for the impairment assessment and the fact that we did not perform an effective risk assessment to identify and assess the relevant risks of material misstatement associated with the impairment of long-lived assets in accordance with IAS-36. Our monitoring controls were also ineffective in identifying these deficiencies in a timely manner.

The control deficiencies resulted in immaterial misstatement to impairment and Wells, pipelines, properties, plant and equipment, net. Furthermore, the control deficiencies described above created a reasonable possibility that a material misstatement to the consolidated financial statements for the year ending December 31, 2021 and 2020 would not be prevented or detected on a timely basis.

In response to the material weakness in fiscal year described above during 2021, 2020 and as of the date of this 20-F, management is in the process of executing a remediation plan that includes the following actions:

1. Reinforce training on IAS-36 for personnel involved in the process of calculating the impairment of long-lived assets;
2. Enhance risk assessment and prioritize remediation activities that most significantly reduce the risk that a material misstatement to the consolidated financial statements would not be prevented or detected on a timely basis;
3. Update the internal procedures related to the calculations of value in use that are aligned with the approach and requirements of the corresponding regulations;
4. Design and implement controls that ensure that the cost figures for operating distributions to be considered in the discounted cash flow calculations correspond to those provided by cost management;
5. Reinforce the process of periodic evaluation of the controls designed and implemented;
6. Update the corresponding internal procedures in which we identify the variables to be considered in the determination of the cash flows for the impairment calculation; and
7. Report regularly to the audit committee on the progress and results of the remediation plan, including the identification, status, and resolution of internal control deficiencies.

We believe that the above actions, and the improvements we expect to achieve as a result, will effectively remedy the material weakness. However, the material weakness in our internal control over financial reporting will not be considered remediated until the operation of the remediated control is sufficiently tested.

During 2021, a remediation plan was established that relates to actions 3, 4, 5, 6 and 7 above. The remediation plan includes three main stages:

1. Identification, strengthening and design of control activities;
2. Implementation of control activities; and
3. Monitoring and testing of operational effectiveness.

As of the date of this annual report, these activities have made progress in a variety of ways. Considerable progress has been made in the stage of identification, strengthening and design of control activities, such as the operation test of the system for the projection of cash flows, controls on inputs such as base prices and volumes for the determination of incoming and outgoing cash flows and updates to the general policies and procedures for the determination of impairment of value of the assets.

We believe that we have made meaningful progress in remedying the material weakness, given its complexity. We conclude that as of December 31, 2021, the material weakness remains in effect. We are taking steps to complete the remediation process during 2022.

(c) Attestation Report of the Independent Registered Public Accounting Firm

Not applicable.

(d) Changes in Internal Control over Financial Reporting

There has been no change in our internal control over financial reporting during 2021 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 16A. Audit Committee Financial Experts

Mr. Juan José Paullada Figueroa and Mr. José Eduardo Beltrán Hernández, members of the Audit Committee of Petróleos Mexicanos, qualify as "audit committee financial experts" within the meaning of this Item 16A, and are independent, as defined in Rule 10A-3 under the Exchange Act.

Item 16B. Code of Ethics

In accordance with the Petróleos Mexicanos Law, in November 2016, we issued the Code of Ethics for Petróleos Mexicanos, its productive subsidiary entities and affiliates, a code of ethics as defined in Item 16B of Form 20-F under the Exchange Act.

On November 26, 2019, the Board of Directors of Petróleos Mexicanos approved and issued an updated Code of Ethics. An updated Code of Ethics was published in the Official Gazette of the Federation on December 24, 2019.

Our Code of Ethics applies to the members of the Board of Directors of Petróleos Mexicanos and the subsidiary entities and all of our employees, including our General Director (Chief Executive Officer), Chief Financial Officer, Chief Accounting Officer and all other employees performing similar functions, as well as other individuals and companies whose actions may affect our reputation. The Code of Ethics is an important component of our ethics and integrity program, which is aimed at eradicating corruption. The Code of Ethics defines values such as respect, non-discrimination, honesty, loyalty, responsibility, legality, impartiality, integrity, inclusivity and human rights, among others, that we expect will help us achieve our goals and which should be reflected in the daily behavior of our employees.

Our Code of Ethics is available on our website at http://www.pemex.com. Waivers cannot be granted to the provisions of this Code. Any amendment to the provisions of the Code of Ethics, will be disclosed on our website at the same address.

On December 7, 2016, our Ethics Committee was formed to monitor the implementation and enforcement of the Code of Ethics. See "Item 4—Information on the Company—Business Overview—PEMEX Corporate Matters—Ethics Committee" for more information.

In addition, on November 11, 2019 the new Code of Conduct for Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies, was published into the official Gazette of the Federation. This Code of Conduct delineates behaviors expected of and banned for our employees, in accordance with the values established in the Code of Ethics approved by the Board of the Directors of Petróleos Mexicanos and contemplates data protection and transparency related matters.

On September 11, 2017, the Anti-corruption Policies and Guidelines for Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies and the Policies and Guidelines to carry out Due Diligence in Petróleos Mexicanos, its productive subsidiary entities and, where applicable, affiliated companies, in Ethics and Corporate Integrity Matters became effective. These Policies and Guidelines were updated and published in the Official Gazette of the Federation on July 21, 2021. The purpose of these regulations is to take action to prevent acts of corruption, as well as provide means for executives and employees to identify, manage, mitigate and confront our own risks as well as third-party risks that may affect the attainment of our objectives with respect to corruption, corporate integrity or our involvement in illicit acts of any kind.

Additionally, we have an ethics tip line and a telephone number available on our website, as a mechanism to provide advice to address questions on ethics and integrity issues within PEMEX and to facilitate receipt of complaints about possible violations to our Code of Ethics or our Code of Conduct. The information received is channeled to the Ethics Committee and the appropriate areas authorized to investigate and, if applicable, pursue cases in accordance with the applicable laws.

We believe that the regulations and mechanisms mentioned above, along with the legal framework applicable to us, will allow us to improve our ability to mitigate our exposure to bribery and corruption risks in our relationships with third parties. See "Item 3—Key Information—Risk Factors—Risk Factors Related to Our Operations—We are subject to Mexican and international anti-corruption, anti-bribery and anti-money laundering laws. Our failure to comply with these laws could result in penalties, which could harm our reputation and have an adverse effect on our business, results of operations and financial condition."

Item 16C. Principal Accountant Fees and Services

In its meeting held on August 24, 2021, the Board of Directors of Petróleos Mexicanos appointed KPMG Mexico as external auditor of Petróleos Mexicanos, its productive state-owned subsidiaries and subsidiary companies for the fiscal year 2021 based on the proposal of the audit committee. See "Item 6—Directors, Senior Management and Employees—Audit Committee."

Audit and Non-Audit Fees

The following table sets forth the aggregate fees billed to us for the fiscal years 2020 and 2021 by KPMG Mexico, our independent registered public accounting firm for the years ended December 31, 2020 and 2021.

	Year ended December 31,			
	2020		2021	
	(in thousands of nominal pesos)			
Audit fees	Ps.	105,434	Ps.	115,324
Audit-related fees		16,003		13,470
Tax Fees		8,750		7,363
All other fees		—		—
Total fees	**Ps.**	**130,187**	**Ps.**	**136,157**

Audit fees in the table above are the aggregate fees billed by KPMG Mexico, in each case for services provided in connection with the audits of our consolidated financial statements and statutory audits.

Audit-related fees in the table above are the aggregate fees billed by KPMG Mexico, in each case for services provided in connection with filings with financial regulators, regulatory filings, limited review of interim financial information and reviews of documents related to offerings of securities, as well as comfort and consent letters and services provided in accordance with the instructions of the audit committee.

Audit Committee Approval Policies and Procedures

In accordance with the Petróleos Mexicanos Law, the audit committee nominates the external auditor for approval by the Board of Directors of Petróleos Mexicanos and issues an opinion regarding the external auditor's report on our consolidated financial statements. See "Item 6—Directors, Senior Management and Employees—Audit Committee."

Item 16D. Exemptions from the Listing Standards for Audit Committees

Not applicable.

Item 16E. Purchases of Equity Securities by the Issuer and Affiliated Purchasers

Not applicable.

Item 16F. Change in Registrant's Certifying Accountant

Not applicable.

Item 16G. Corporate Governance

Not applicable.

Item 16H. Mine Safety Disclosure

Not applicable.

PART III

Item 17. Financial Statements

Not applicable.

Item 18. Financial Statements

See pages F-1 through F—164, incorporated herein by reference.

Item 19. Exhibits

Documents filed as exhibits to this Form 20-F:

1.1	*Ley de Petróleos Mexicanos* (Petróleos Mexicanos Law), effective October 7, 2014 (English translation) (previously filed as Exhibit 1.1 to Petróleos Mexicanos' annual report on Form 20-F (File No. 0-99) on April 30, 2015 and incorporated by reference herein).
1.2	*Reglamento de la Ley de Petróleos Mexicanos* (Regulations to the Petróleos Mexicanos Law), effective November 1, 2014 and, as amended, as of February 9, 2015 (English translation) (previously filed as Exhibit 1.2 to Petróleos Mexicanos' annual report on Form 20-F (File No. 0-99) on April 30, 2015 and incorporated by reference herein).
1.3	*Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Exploración y Producción* (Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Exploration and Production), effective June 1, 2015 (English translation) (previously filed as Exhibit 3.4 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-205763) on July 21, 2015 and incorporated by reference herein).
1.4	*Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Cogeneración y Servicios* (Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Cogeneration and Services), effective June 1, 2015 (English translation) (previously filed as Exhibit 3.5 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-205763) on July 21, 2015 and incorporated by reference herein).
1.5	*Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Perforación y Servicios* (Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Drilling and Services), effective August 1, 2015 (English translation) (previously filed as Exhibit 3.5 to Amendment No. 1 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-205763) on February 8, 2016 and incorporated by reference herein).
1.6	*Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Logística* (Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Logistics), effective October 1, 2015 (English translation) (previously filed as Exhibit 3.6 to Amendment No. 1 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-205763) on February 8, 2016 and incorporated by reference herein).
1.7	*Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Transformación Industrial* (Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Industrial Transformation), effective November 1, 2015 (English translation) (previously filed as Exhibit 3.7 to Amendment No. 1 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-205763) on February 8, 2016 and incorporated by reference herein).
1.8	*Adecuación al Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Exploración y Producción* (Amendment to Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Exploration and Production), effective December 29, 2015 (English Translation) (previously filed as Exhibit 3.4 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-220721) on September 29, 2017 and incorporated by reference herein).
1.9	*Adecuación al Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Exploración y Producción* (Amendment to Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Exploration and Production), effective May 12, 2016 (English translation) (previously filed as Exhibit 3.4 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-213351) on November 30, 2016 and incorporated by reference herein).
1.10	*Adecuación al Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Exploración y Producción* (Amendment to Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Exploration and Production), effective July 1, 2019 (English translation).

1.11	*Adecuación al Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Logística* (Amendment to Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Logistics), effective July 1, 2019 (English translation).
1.12	*Adecuación al Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Transformación Industrial* (Amendment to Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Industrial Transformation), effective July 1, 2019 (English translation).
1.13	*Adecuación al Acuerdo de Creación de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Transformación Industrial* (Amendment to Creation Resolution of the Productive State-Owned Subsidiary of Petróleos Mexicanos, denominated Pemex Industrial Transformation), effective January 1, 2021 (English translation).
1.14	*Declaratoria de Liquidación y Extinción de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Cogeneración y Servicios* (Declaration of Liquidation and Extinction of Pemex Cogeneration and Services), effective July 27, 2018 (English translation) (previously filed as Exhibit 1.10 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on April 30, 2019 and incorporated by reference herein).
1.15	*Declaratoria de Extinción de la Empresa Productiva del Estado Subsidiaria de Petróleos Mexicanos, denominada Pemex Perforación y Servicios* (Declaration of Extinction of Pemex Drilling and Services), effective July 1, 2019 (English translation).
2.1	Indenture, dated as of September 18, 1997, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas (formerly known as Bankers Trust Company) (previously filed as Exhibit 4.1 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-7796) on October 17, 1997 and incorporated by reference herein). (P)
2.2	Indenture, dated as of August 7, 1998, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas (formerly known as Bankers Trust Company) (previously filed as Exhibit 4.1 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-9310) on August 24, 1998 and incorporated by reference herein). (P)
2.3	Indenture, dated as of July 31, 2000, among the Pemex Project Funding Master Trust, Petróleos Mexicanos and Deutsche Bank Trust Company Americas (formerly known as Bankers Trust Company) (previously filed as Exhibit 2.5 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 28, 2001 and incorporated by reference herein). (P)
2.4	First supplemental indenture dated as of September 30, 2009, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of July 31, 2000 (previously filed as Exhibit 2.4 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 29, 2010 and incorporated by reference herein).
2.5	Indenture, dated as of December 30, 2004, among the Pemex Project Funding Master Trust, Petróleos Mexicanos and Deutsche Bank Trust Company Americas (previously filed as Exhibit 2.7 to Petróleos Mexicanos' Annual Report on Form 20-F (File No. 0-99) on June 30, 2005 and incorporated by reference herein).
2.6	First supplemental indenture dated as of September 30, 2009, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of December 30, 2004 (previously filed as Exhibit 2.6 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 29, 2010 and incorporated by reference herein).
2.7	Indenture, dated as of January 27, 2009, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas (previously filed as Exhibit 2.5 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 30, 2009 and incorporated by reference herein).

2.8 Fiscal Agency Agreement between Petróleos Mexicanos and Deutsche Bank Trust Company Americas (formerly known as Bankers Trust Company), dated as of June 16, 1993, and amended and restated as of February 26, 1998 (previously filed as Exhibit 3.1 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 29, 2000 and incorporated by reference herein). (P)

2.9 Trust Agreement, dated as of November 10, 1998, among The Bank of New York, The Bank of New York (Delaware) and Petróleos Mexicanos (previously filed as Exhibit 3.1 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 30, 1999 and incorporated by reference herein). (P)

2.10 Amendment No. 1, dated as of November 17, 2004, to the Trust Agreement among The Bank of New York, The Bank of New York (Delaware) and Petróleos Mexicanos dated as of November 10, 1998 (previously filed as Exhibit 2.10 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 30, 2005 and incorporated by reference herein).

2.11 Amendment No. 2, dated as of December 22, 2004, to the Trust Agreement among The Bank of New York, The Bank of New York (Delaware) and Petróleos Mexicanos dated as of November 10, 1998 (previously filed as Exhibit 2.11 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 30, 2005 and incorporated by reference herein).

2.12 Amendment No. 3, dated as of August 17, 2006, to the Trust Agreement among The Bank of New York, The Bank of New York (Delaware) and Petróleos Mexicanos dated as of November 10, 1998 (previously filed as Exhibit 3.4 to the Petróleos Mexicanos Registration Statement on Form F-4/A (File No. 333-136674) on October 27, 2006 and incorporated by reference herein).

2.13 Assignment and Indemnity Agreement, dated as of November 10, 1998, among Petróleos Mexicanos, Pemex-Exploración y Producción, Pemex-Refinación, Pemex-Gas y Petroquímica Básica and the Pemex Project Funding Master Trust (previously filed as Exhibit 3.2 to the Petróleos Mexicanos Annual Report on Form 20-F (File No. 0-99) on June 30, 1999 and incorporated by reference herein). (P)

2.14 Amendment No. 1, dated as of August 17, 2006, to the Assignment and Indemnity Agreement among Petróleos Mexicanos, Pemex-Exploración y Producción, Pemex-Refinación, Pemex-Gas y Petroquímica Básica, Pemex-Petroquímica, and the Pemex Project Funding Master Trust dated as of November 10, 1998 (previously filed as Exhibit 4.7 to the Petróleos Mexicanos Registration Statement on Form F-4/A (File No. 333-136674-04) on October 27, 2006 and incorporated by reference herein).

2.15 Guaranty Agreement, dated July 29, 1996, among Petróleos Mexicanos, Pemex-Exploración y Producción, Pemex-Refinación and Pemex-Gas y Petroquímica Básica (previously filed as Exhibit 4.4 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-7796) on October 17, 1997 and incorporated by reference herein). (P)

2.16 Amendment Agreement dated as of June 24, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, amending the terms and conditions of the Petróleos Mexicanos 8.625% Bonds due 2023 issued pursuant to the Fiscal Agency Agreement between Petróleos Mexicanos and Deutsche Bank Trust Company (as amended and restated) (previously filed as Exhibit 4.9 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-198588) on September 5, 2014 and incorporated by reference herein).

2.17 First supplemental indenture dated as of June 24, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of September 18, 1997 (previously filed as Exhibit 4.10 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-198588) on September 5, 2014 and incorporated by reference herein).

2.18 First supplemental indenture dated as of June 24, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of August 7, 1998 (previously filed as Exhibit 4.11 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-198588) on September 5, 2014 and incorporated by reference herein).

2.19	Second supplemental indenture dated as of June 24, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of July 31, 2000 (previously filed as Exhibit 4.12 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-198588) on September 5, 2014 and incorporated by reference herein).
2.20	Second supplemental indenture dated as of June 24, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of December 30, 2004 (previously filed as Exhibit 4.13 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-198588) on September 5, 2014 and incorporated by reference herein).
2.21	Fourth supplemental indenture dated as of June 24, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of January 27, 2009 (previously filed as Exhibit 4.14 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-198588) on September 5, 2014 and incorporated by reference herein).
2.22	Third supplemental indenture dated as of September 10, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of July 31, 2000 (previously filed as Exhibit 2.22 to Petróleos Mexicanos' annual report on Form 20-F (File No. 0-99) on April 30, 2015 and incorporated by reference herein).
2.23	Fifth supplemental indenture dated as of October 15, 2014, between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of January 27, 2009 previously filed as Exhibit 2.23 to Petróleos Mexicanos' annual report on Form 20-F (File No. 0-99) on April 30, 2015 and incorporated by reference herein).
2.24	Sixth supplemental indenture dated as of December 8, 2015 between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of January 27, 2009 (previously filed as Exhibit 4.17 to Amendment No. 1 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-205763) on February 8, 2016 and incorporated by reference herein).
2.25	Seventh supplemental indenture dated as of June 14, 2016 between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of January 27, 2009 (previously filed as Exhibit 4.18 to Amendment No. 1 to the Petróleos Mexicanos Registration Statement on Form F-4 (File No. 333-213351) on August 26, 2016 and incorporated by reference herein).
2.26	Eighth supplemental indenture dated as of February 16, 2018 between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of January 27, 2009. (previously filed as Exhibit 2.26 to Petroleos Mexicanos' annual report on Form 20-F (File No. 0-99) on May 17, 2021 and incorporated by reference herein).
2.27	Ninth Supplemental Indenture dated as of June 4, 2018 between Petróleos Mexicanos and Deutsche Bank Trust Company Americas, to the indenture dated as of January 27, 2009. (previously filed as Exhibit 2.27 to Petroleos Mexicanos' annual report on Form 20-F (File No. 0-99) on May 17, 2021 and incorporated by reference herein).

The registrant agrees to furnish to the U.S. Securities and Exchange Commission, upon request, copies of any instruments that define the rights of holders of long-term debt of the registrant that are not filed as exhibits to this report.

8.1	For a list of subsidiaries, their jurisdiction of incorporation and the names under which they do business, see "Consolidated Structure of PEMEX" on page 3.
12.1	CEO Certification pursuant to Rule 13a-14(a)/15d-14(a).
12.2	CFO Certification pursuant to Rule 13a-14(a)/15d-14(a).
13.1	Certification pursuant to Rule 13a-14(b)/15d-14(b) and 18 U.S.C. §1350.
15.1	Consent letters of GLJ Ltd.
15.2	Reports on Reserves Data by GLJ Ltd., Independent Qualified Reserves Evaluator or Auditor, as of December 31, 2021.
15.3	Consent letter of DeGolyer and MacNaughton.
15.4	Report on Reserves Data by DeGolyer and MacNaughton, Independent Qualified Reserves Evaluator or Auditor, as of January 1, 2022.
15.5	Consent letter of Sproule International Ltd.
15.6	Reports on Reserves Data by Sproule International Ltd., Independent Qualified Reserves Evaluator or Auditor, as of December 31, 2021.
15.7	Consent letters of Ryder Scott Company L.P.
15.8	Reports on Reserves Data by Ryder Scott Company L.P., Independent Qualified Reserves Evaluator or Auditor, as of December 31, 2021.
17.1	Subsidiary Guarantors and Issuers of Guaranteed Securities.
101.INS	Inline XBRL Instance Document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

(P) Filed via paper.

SIGNATURE

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

PETRÓLEOS MEXICANOS

By: /s/ Antonio López Velarde Loera

Name: Antonio López Velarde Loera
Title: Acting Chief Financial Officer/Acting Corporate Director of Finance

Date: April 29, 2022

Contents **Page**

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm (KPMG Cárdenas Dosal, S.C.; Mexico City, Mexico; Auditor Firm ID: 1141) F-1
Consolidated Statements of Financial Position F-4
Consolidated Statements of Comprehensive Income F-6
Consolidated Statements of Changes in Equity F-8
Consolidated Statements of Cash Flows F-9
Notes to the Consolidated Financial Statements F-11

KPMG Cárdenas Dosal, S.C.
Manuel Ávila Camacho 176 P1,
Reforma Social, Miguel Hidalgo,
C.P. 11650, Ciudad de México.
Teléfono: +01 (55) 5246 8300
kpmg.com.mx

Report of Independent Registered Public Accounting Firm

To the Board of Directors of

Petróleos Mexicanos

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated statements of financial position of Petróleos Mexicanos, Productive State-Owned Subsidiaries and Subsidiary Companies (PEMEX) as of December 31, 2021 and 2020, the related consolidated statements of comprehensive income, changes in equity (deficit), and cash flows for each of the years in the three-year period ended December 31, 2021, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of PEMEX as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2021, in conformity with International Financial Reporting Standard (IFRS) as issued by the International Accounting Standards Board.

Going Concern

The accompanying consolidated financial statements have been prepared assuming that PEMEX will continue as a going concern. As discussed in Note 22 F to the consolidated financial statements, PEMEX has suffered recurring losses from operations and has a net capital deficiency that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard these matters are also described in Note 22 F. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of PEMEX's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to PEMEX in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. PEMEX is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of PEMEX's internal control over financial reporting. Accordingly, we express no such opinion.

(Continued)

"D.R." © KPMG Cárdenas Dosal, S.C., la firma mexicana miembro de la red de firmas miembro de KPMG afiliadas a KPMG International Cooperative ("KPMG International"), una entidad suiza. Impreso en México. Todos los derechos reservados.

Aguascalientes, Ags.
Cancún, Q. Roo.
Ciudad de México.
Ciudad Juárez, Chih.
Culiacán, Sin.
Chihuahua, Chih.
Guadalajara, Jal.
Hermosillo, Son.
León, Gto.
Mérida, Yuc.
Mexicali, B.C.
Monterrey, N.L.
Puebla, Pue.
Querétaro, Qro.
Reynosa, Tamps.
Saltillo, Coah.
San Luis Potosí, S.L.P.
Tijuana, B.C.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

The impact of estimated proved oil and gas reserves on depreciation and amortization expenses related to producing oil and gas properties (000's mxp)

As discussed in notes 3E iii) and 13 to the consolidated financial statements, PEMEX reported depreciation and amortization expenses related to producing oil and gas properties of $108,509,633 for the year ended December 31, 2021. PEMEX calculates depreciation and amortization expenses related to producing oil and gas properties using the unit of production method. Under this method, the capitalized costs of producing oil and gas properties, along with support equipment and facilities, are depreciated or amortized to profit or loss in proportion to the production of the proved oil and gas reserves. On an annual basis PEMEX's internal petroleum reservoir engineers use geological and engineering data as well as commercial and market information and estimates of development and production costs to estimate the proved oil and gas reserves. PEMEX engages external petroleum reservoir engineering specialists to evaluate these estimates.

We identified the impact of estimated proved oil and gas reserves on the depreciation and amortization expenses related to producing oil and gas properties as a critical audit matter. Complex auditor judgement was required to evaluate PEMEX's estimate of proved oil and gas reserves, which is the most significant judgmental input to the depreciation and amortization expenses calculation. The process for evaluating the proved oil and gas reserves is highly complex, involves a number of subjective assumptions and requires specialized skills and knowledge.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design of certain internal controls related to the determination of the estimate of proved oil and gas reserves, including controls related to the forecasted production of proved oil and gas reserves. We assessed the methodology used by PEMEX's internal petroleum reservoir engineers to estimate proved oil and gas reserves. We evaluated the professional qualifications and the knowledge, skills, and ability of PEMEX'S internal petroleum reservoir engineers and the external petroleum reservoir engineering specialists engaged by PEMEX. We obtained the proved oil and gas reserves reports from the external petroleum reservoir engineering specialists and compared the information with that used by the internal petroleum reservoir engineers. We read the findings of the external petroleum reservoir engineering specialist's review of the methods and procedures used by PEMEX in estimating the proved reserves to assess compliance with industry and regulatory standards.

Impairment of exploration and production and industrial transformation cash generating units (000's mxp)

As discussed in notes 3H and 13 to the consolidated financial statements, PEMEX recognized a net impairment reversal of $ 2,409,639 in the exploration and production and industrial transformation ("upstream") cash generating units (CGUs) for the year ended December 31, 2021. At the end of each reporting period PEMEX assesses each of its CGUs for indicators of impairment and also assesses whether there is an indication that previously recognized impairment losses, except those related to goodwill, have reversed. When there is an indication of impairment and the carrying amount of a CGU exceeds its recoverable amount, PEMEX records an impairment charge in profit or loss. Impairment losses are reversed in subsequent periods if there is an indication that the impairment loss no longer exists or may have decreased and there has been an increase in the recoverable amount since the recognition of the impairment expense. The recoverable amount of a CGU is defined as the higher of its fair value minus the cost of disposal, and its value in use. The value in use is the present value of the estimated future net cash flows expected to arise from the continuing use of a CGU and from its disposal at the end of its useful life; discounted by applying a pre-tax discount rate. For the upstream CGUs, the recoverable amount was determined as the value in use and required the use of a number of assumptions, including the forecasted production of oil and gas proved and probable reserves, estimate of future operating and development costs for the exploration and production CGUs and the discount rate for all upstream CGUs.

We identified the assessment of certain assumptions used to determine the recoverable amount of the upstream CGUs as a critical audit matter. The estimation of the recoverable amount of these CGUs requires the use of highly subjective, significant assumptions in relation to the forecasted production of oil and gas proved and probable reserves, the future operating and development costs for the exploration and production CGUs and the discount rate for both the exploration and production and the industrial transformation CGUs. It required a high degree of subjective auditor judgment to evaluate these significant, judgmental assumptions.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design of certain internal controls related to the impairment assessment process, including controls related to the forecasted production of oil and gas proved and probable reserves, estimate of future operating and development costs and the discount rate. We evaluated the competence, capabilities and objectivity of PEMEX's internal petroleum reservoir engineers, who forecast the production of oil and gas proved and probable reserves. We compared the future production quantities forecast by PEMEX's internal petroleum reservoir engineers to the production used in the estimate of future net cash flows. We developed our independent correlation calculations based on PEMEX's historical data and compared to PEMEX's correlation factors. We compared the future production costs and expenses used in the estimate of future net cash flows to historical data. In addition, we involved a valuation professional with specialized skills and knowledge, who assisted in evaluating PEMEX's discount rate, by comparing it against a discount rate range that was independently developed using publicly available market data for comparable entities.

/s/ KPMG CÁRDENAS DOSAL, S.C.

We have served as PEMEX's auditor since 2018
Mexico City, Mexico
April 29, 2022

Petróleos Mexicanos,
Productive State-Owned Subsidiaries and Subsidiary Companies

Consolidated statements of financial position
As of December 31, 2021 and December 31, 2020
(Figures stated in thousands, except as noted)

Assets	**Note**	**2021**	**2021**	**2020**
		(Unaudited; U.S. dollars)		
Current assets:				
Cash and cash equivalents	8,9	$ 3,716,882	76,506,447	39,989,781
Customers	7,8,10 a)	4,919,430	101,259,081	68,382,413
Other financing receivables	7,8,10 b)	1,981,546	40,787,153	31,615,623
Other non-financing receivables	7,8,10 b)	6,624,243	136,350,115	89,789,428
Inventories	11	4,183,601	86,113,142	52,605,661
Current portion of the Government Bonds	15-b	60,896	1,253,451	18,036,557
Derivative financial instruments	8,18	606,018	12,473,967	25,947,993
Other current assets	8	177,360	3,650,688	3,492,283
Total current assets	6	22,269,976	458,394,044	329,859,739
Non-current assets:				
Investments in joint ventures and associates	8,12	109,551	2,254,952	12,015,129
Wells, pipelines, properties, plant and equipment	13	61,920,111	1,274,532,607	1,276,129,521
Rights of use	17	2,637,232	54,283,458	59,195,257
Long-term notes receivable, net of current portion	8,15-c	79,981	1,646,290	886,827
Long-term of the Government Bonds	15-b	5,324,746	109,601,905	111,512,962
Deferred income taxes and duties	21	4,482,029	92,255,839	108,529,199
Intangible assets, net	14	972,436	20,016,146	22,775,784
Other assets	15-d	1,900,208	39,112,930	7,583,510
Total non-current assets	6	77,426,294	1,593,704,127	1,598,628,189
Total assets		$ 99,696,270	2,052,098,171	1,928,487,928

The accompanying notes are an integral part of these consolidated financial statements

Liabilities	**Note**	**2021**	**2021**	**2020**
		(Unaudited; U.S. dollars)		
Short-term debt and current portion of long - term debt	8,16	$ 23,916,419	492,283,613	391,097,267
Short-term leases	8,17	383,942	7,902,874	8,106,937
Suppliers	8	12,828,545	264,056,358	281,978,041
Income taxes and duties payable	21	5,477,863	112,753,591	51,200,314
Accounts and accrued expenses payable	8,18	1,555,411	32,015,808	30,709,497
Derivative financial instruments	8,18	662,477	13,636,086	9,318,015
Total current liabilities	6	44,824,657	922,648,330	772,410,071
Long-term liabilities:				
Long-term debt, net of current portion	8,16	85,379,662	1,757,412,281	1,867,630,050
Long-term leases	8,17	2,499,515	51,448,775	55,077,191
Employee benefits	19	67,241,803	1,384,071,648	1,535,168,086
Provisions for sundry creditors	20	4,488,919	92,397,666	94,625,884
Other liabilities		523,668	10,778,904	4,891,562
Deferred income taxes	21	162,331	3,341,350	3,412,114
Total long-term liabilities	6	160,295,898	3,299,450,624	3,560,804,887
Total liabilities		205,120,555	4,222,098,954	4,333,214,958
Equity (deficit)	6,22			
Controlling interest:				
Certificates of Contribution “A”		40,871,843	841,285,576	524,931,447
Mexican Government contributions		2,124,546	43,730,591	43,730,591
Legal reserve		48,686	1,002,130	1,002,130
Accumulated other comprehensive result		(1,852,917)	(38,139,514)	(251,284,990)
Accumulated deficit:				
From prior years		(132,313,547)	(2,723,475,900)	(2,214,597,087)
Net loss for the year		(14,309,139)	(294,532,168)	(508,878,813)
Total controlling interest		(105,430,528)	(2,170,129,285)	(2,405,096,722)
Total non-controlling interest		6,243	128,502	369,692
Total equity (deficit)		(105,424,285)	(2,170,000,783)	(2,404,727,030)
Total liabilities and equity (deficit)		$ 99,696,270	2,052,098,171	1,928,487,928

The accompanying notes are an integral part of these consolidated financial statements.

Petróleos Mexicanos,
Productive State-Owned Subsidiaries and Subsidiary Companies

Consolidated statements of comprehensive income
For the period ended December 31, 2021 and 2020
(Figures stated in thousands, except as noted)

	Note	2021	2021	2020	2019
		(Unaudited; U.S. dollars)			
Net sales					
Domestic	6,7	$ 37,025,508	762,114,551	503,712,031	807,020,214
Export	6,7	35,394,410	728,540,828	445,234,329	585,842,291
Services income	6,7	241,613	4,973,241	4,715,484	9,108,680
Total revenues		72,661,531	1,495,628,620	953,661,844	1,401,971,185
(Impairment) of wells, pipelines, properties, plant and equipment, net	6,13 e)	(58,814)	(1,210,595)	(36,353,700)	(31,283,154)
Cost of sales	6,23	51,820,667	1,066,650,702	832,614,690	1,122,933,424
Gross income	6	20,782,050	427,767,323	84,693,454	247,754,607
Distribution, transportation and sale expenses	6,23	730,612	15,038,550	12,436,242	21,885,911
Administrative expenses	6,23	7,308,393	150,432,311	145,894,444	130,768,822
Other revenues	6,24-a	855,076	17,600,466	11,768,846	14,940,447
Other expenses	6,24-b	(2,476,211)	(50,969,096)	(1,194,714)	(7,211,691)
Operating income	6	11,121,910	228,927,832	(63,063,100)	102,828,630
Financing income[1]	6	1,404,367	28,906,784	16,742,048	29,235,603
Financing cost[2]	6	(7,995,319)	(164,571,647)	(161,765,242)	(132,861,340)
Derivative financial instruments (cost) income, net	6,18	(1,225,459)	(25,224,243)	17,096,141	(23,263,923)
Foreign exchange (loss) income, net	6,18	(2,219,013)	(45,675,050)	(128,949,304)	86,930,388
Sum of financing (costs) net, derivative instruments (cost) and foreign exchange gains, net		(10,035,424)	(206,564,156)	(256,876,357)	(39,959,272)
(Loss) profit sharing in joint ventures and associates	6,12	(150,028)	(3,088,107)	(3,540,533)	(1,157,893)
(Impairment) in joint ventures	6,12	(325,665)	(6,703,324)	—	—
(Loss) income before duties, taxes and other		610,793	12,572,245	(323,479,990)	61,711,465
Profit sharing duty, net	21	14,906,468	306,827,282	154,609,136	372,812,500
Income tax benefit	21	25,304	520,840	30,962,939	(28,989,011)
Total duties, taxes and other	6	14,931,772	307,348,122	185,572,075	343,823,489
Net loss (income) for the year	6	(14,320,979)	(294,775,877)	(509,052,065)	(282,112,024)
Other comprehensive results:					
Items that will be reclassified subsequently:					
Currency translation effect		376,038	7,740,186	7,876,961	(2,695,532)
Items that will not be reclassified					
Actuarial gains (losses) - employee benefits, net of taxes		9,979,246	205,407,809	(19,182,373)	(309,327,314)
Total other comprehensive results		10,355,284	213,147,995	(11,305,412)	(312,022,846)
Total comprehensive (loss) income		(3,965,695)	(81,627,882)	(520,357,477)	(594,134,870)
Net loss attributable to					
Controlling interest		(14,309,139)	(294,532,168)	(508,878,813)	(281,490,302)
Non-controlling interest		(11,840)	(243,709)	(173,252)	(621,722)
Net loss (income) for the year		(14,320,979)	(294,775,877)	(509,052,065)	(282,112,024)

	Note	2021	2021	2020	2019
		(Unaudited; U.S. dollars)			
Other comprehensive results attributable to:					
Controlling interest		10,355,162	213,145,476	(11,206,400)	(312,025,657)
Non-controlling interest		122	2,519	(99,012)	2,811
Total other comprehensive results		10,355,284	213,147,995	(11,305,412)	(312,022,846)
Comprehensive (loss) income:					
Controlling interest		(3,953,977)	(81,386,692)	(520,085,213)	(593,515,959)
Non-controlling interest		(11,718)	(241,190)	(272,264)	(618,911)
Total comprehensive (loss) income		(3,965,695)	(81,627,882)	(520,357,477)	(594,134,870)

The accompanying notes are an integral part of these consolidated financial statements

(1) Includes financing income from investments and gain on discount rate of plugging of wells in 2021, 2020 and 2019.
(2) Mainly interest on debt.

Petróleos Mexicanos,
Productive State-Owned Subsidiaries and Subsidiary Companies

Consolidated statements of changes in equity (deficit)
For the years ended December 31, 2021, 2020 and 2019
(Figures stated in thousands, except as noted) (See Note 22)

	Controlling interest									
	Accumulated other comprehensive income (loss)					Accumulated deficit				
	Certificates of Contribution "A"	Mexican Government contributions	Legal reserve	Cumulative currency translation effect	Actuarial(losses) gains on employee benefits effect	For the year	From prior years	Total	Non-controlling interest	Total Equity (deficit)
Balance as of December 31, 2019	**478,675,447**	**43,730,591**	**1,002,130**	**43,229,070**	**(283,307,660)**	**(281,490,302)**	**(1,933,106,785)**	**(1,931,267,509)**	**(141,793)**	**(1,931,409,302)**
Transfer to accumulated deficit	—	—	—	—	—	281,490,302	(281,490,302)	—	—	—
Increase in Certificates of Contribution "A"	46,256,000	—	—	—	—	—	—	46,256,000	—	46,256,000
Non-controlling divestment									783,749	783,749
Total comprehensive loss	—	—	—	7,972,187	(19,178,587)	(508,878,813)	—	(520,085,213)	(272,264)	(520,357,477)
Balances as of December 31, 2020	**524,931,447**	**43,730,591**	**1,002,130**	**51,201,257**	**(302,486,247)**	**(508,878,813)**	**(2,214,597,087)**	**(2,405,096,722)**	**369,692**	**(2,404,727,030)**
Transfer to accumulated deficit	—	—	—	—	—	**508,878,813**	**(508,878,813)**	—	—	—
Increase in Mexican Government contributions	316,354,129	—	—	—	—	—	—	316,354,129	—	316,354,129
Total comprehensive (loss) income	—	—	—	7,744,468	205,401,008	(294,532,168)	—	(81,386,692)	(241,190)	(81,627,882)
Balances as of December 31, 2021	**841,285,576**	**43,730,591**	**1,002,130**	**58,945,725**	**(97,085,239)**	**(294,532,168)**	**(2,723,475,900)**	**(2,170,129,285)**	**128,502**	**(2,170,000,783)**
(Unaudited, U.S. Dollars)	40,871,843	2,124,546	48,686	2,863,737	(4,716,654)	(14,309,139)	(132,313,547)	(105,430,528)	6,243	(105,424,285)

The accompanying notes are an integral part of these consolidated financial statements

Petróleos Mexicanos,
Productive State-Owned Subsidiaries and Subsidiary Companies

Consolidated statements of cash flows
For the period ended December 31, 2021, 2020 and 2019
(Figures stated in thousands, except as noted)

	2021	2021	2020	2019
	(Unaudited; U.S. dollars)			
Operating activities:				
Net (loss) income:	$ (14,320,979)	(294,775,877)	(509,052,065)	(282,112,024)
Items related to investment activities				
Income taxes and duties	14,931,772	307,348,122	185,572,075	343,823,489
Depreciation and amortization of Wells, pipelines, properties, plant and equipment	6,482,443	133,431,365	129,631,820	137,187,010
Amortization of intangible assets	19,593	403,295	478,988	543,372
(Impairment) of wells, pipelines, properties, plant and equipment	58,814	1,210,595	36,353,700	31,283,154
Capitalized unsuccessful wells	472,728	9,730,391	10,947,702	71,604,308
Unsuccessful wells from intangible assets	610,475	12,565,711	8,404,284	7,990,877
Loss from derecognition of disposal of wells, pipelines, properties, plant and equipment	2,297,939	47,299,622	5,297,562	2,541,558
Depreciation of rights of use	311,311	6,407,871	7,229,231	7,429,275
Reversal of impairment of rights of use	(4,228)	(87,025)	—	—
Impairment of joint ventures	325,665	6,703,324	—	—
Loss from derecognition of intangible assets	—	—	396,118	—
Cancellation of leases	(21,032)	(432,906)	(1,101,987)	—
Unrealized foreign exchange loss (income) of reserve for well abandonment	216,392	4,454,106	4,555,692	(258,816)
(Gains) on disposal of subsidiary companies	—	—	(707,533)	—
Loss (profit) sharing in joint ventures and associates	150,028	3,088,107	3,540,533	1,157,893
Items related to financing activities				
Unrealized foreign exchange loss (income)	2,161,214	44,485,347	132,466,243	(78,244,974)
Interest expense	7,995,319	164,571,647	161,765,242	132,861,340
Interest income	(1,404,367)	(28,906,784)	(16,742,048)	(29,235,603)
Funds from (used in) operating activities	20,283,087	417,496,911	159,035,557	346,570,859
Profit-sharing duty and income tax paid	(12,917,315)	(265,883,549)	(172,369,522)	(347,515,447)
Derivative financial instruments	864,386	17,792,097	(21,783,819)	11,640,873
Accounts receivable	(2,351,820)	(48,408,683)	(20,353,395)	(8,534,028)
Inventories	(386,762)	(7,960,924)	17,009,543	(649,629)
Suppliers	(272,752)	(5,614,192)	23,030,055	46,561,282
Accounts payable and accrued expenses	63,464	1,306,311	4,654,346	1,137,483
Provisions for sundry creditors	300,475	6,184,831	2,222,492	(5,787,614)
Employee benefits	3,298,110	67,886,654	59,170,346	66,954,701
Other taxes and duties	312,671	6,435,856	14,678,059	(25,157,966)
Net cash flows from (used in) operating activities	9,193,544	189,235,312	65,293,662	85,220,514

	2021	2021	2020	2019
	(Unaudited; U.S. dollars)			
Investing activities				
Other notes receivable	—	—	—	68,863
Interest collected	22,277	458,536	936,350	16,217,132
Resources from the sale of subsidiary companies	—	—	134,716	—
Proceeds from FONADIN - grants deferred income	213,752	4,399,765	—	—
Other assets	(1,539,477)	(31,687,825)	(3,592,553)	(710,867)
Acquisition of wells, pipelines, properties, plant and equipment	(10,182,516)	(209,591,816)	(114,977,051)	(109,653,693)
Intangible assets	(1,254,122)	(25,814,218)	(23,641,105)	(17,220,238)
Net cash flows (used in) from investing activities	(12,740,086)	(262,235,558)	(141,139,643)	(111,298,803)
Cash deficit in financing activities	(3,546,542)	(73,000,246)	(75,845,981)	(26,078,289)
Financing activities:				
Increase in equity due to Certificates of Contribution "A"	15,369,307	316,354,129	46,256,000	122,131,000
Long-term receivables from the Mexican Government.	767,056	15,788,696	4,102,622	32,493,666
Interest received for long-term receivable from the Mexican Government	346,227	7,126,559	1,698,318	6,211,217
Lease payments	(370,316)	(7,622,403)	(7,979,972)	(10,709,421)
Interest of lease paid	(177,134)	(3,646,028)	(2,030,829)	—
Loans obtained from financial institutions	79,491,673	1,636,216,843	1,288,129,868	1,167,834,946
Debt payments, principal only	(82,958,757)	(1,707,581,580)	(1,151,962,147)	(1,185,042,283)
Interest paid	(7,639,936)	(157,256,625)	(130,989,150)	(127,945,203)
Net cash flows from financing activities	4,828,120	99,379,591	47,224,710	4,973,922
Net increase (decrease) in cash and cash equivalents	1,281,578	26,379,345	(28,621,271)	(21,104,367)
Effects of foreign exchange on cash balances	492,496	10,137,321	7,989,421	(186,411)
Cash and cash equivalents at the beginning of the year	1,942,808	39,989,781	60,621,631	81,912,409
Cash and cash equivalents at the end of the year (Note 9)	$ 3,716,882	76,506,447	39,989,781	60,621,631

The accompanying notes are an integral part of these consolidated financial statements

NOTE 1. STRUCTURE AND BUSINESS OPERATIONS OF PETRÓLEOS MEXICANOS, SUBSIDIARY ENTITIES AND SUBSIDIARY COMPANIES

Petróleos Mexicanos was created by a decree issued by the Mexican Congress on June 7, 1938. The decree was published in the Diario Oficial de la Federación ("Official Gazette of the Federation") on July 20, 1938 and came into effect on that date. On December 20, 2013, the *Decreto por el que se reforman y adicionan diversas disposiciones de la Constitución Política de los Estados Unidos Mexicanos, en Materia de Energía* (Decree that amends and supplements various provisions of the Mexican Constitution relating to energy matters), was published in the Official Gazette of the Federation. This Decree came into effect on December 21, 2013 and includes transitional articles setting forth the general framework and timeline for implementing legislation relating to the energy sector.

On August 11, 2014, the *Ley de Petróleos Mexicanos* (the "Petróleos Mexicanos Law") was published in the Official Gazette of the Federation. The Petróleos Mexicanos Law became effective on October 7, 2014, except for certain provisions. On December 2, 2014, the *Secretaría de Energía* ("Ministry of Energy") published in the Official Gazette of the Federation the declaration pursuant to which the special regime governing Petróleos Mexicanos' activities relating to productive state-owned subsidiaries, affiliates, compensation, assets, administrative liabilities, state dividend, budget and debt came into effect. On June 10, 2015, the *Disposiciones Generales de Contratación para Petróleos Mexicanos y sus Empresas Productivas Subsidiarias* (General Contracting Provisions for Petróleos Mexicanos and its productive state-owned subsidiaries) was published in the Official Gazette of the Federation and the following day the special regime for acquisitions, leases, services and public works matters came into effect.

Once the Petróleos Mexicanos Law came into effect, Petróleos Mexicanos was transformed from a decentralized public entity to a productive state-owned company. Petróleos Mexicanos is a legal entity empowered to own property and carry on business in its own name with the purpose of carrying out exploration and extraction of crude oil and other hydrocarbons in the United Mexican States ("Mexico"), as well as refining, processing, storing, transporting, selling and trading in these products.

The Subsidiary Entities, *Pemex Exploración y Producción* ("Pemex Exploration and Production"), *Pemex Transformación Industrial* ("Pemex Industrial Transformation") and *Pemex Logística* ("Pemex Logistics") are productive state-owned subsidiaries empowered to own property and carry on business in their own name, subject to the direction and coordination of Petróleos Mexicanos (the "Subsidiary Entities").

The Subsidiary Entities and their primary purposes, are as follows:

- Pemex Exploration and Production: This entity is in charge of exploration and extraction of crude oil and solid, liquid or gaseous hydrocarbons in Mexico, in the exclusive economic zone of Mexico and abroad, as well as drilling services and repair and services of wells;
- Pemex Industrial Transformation: This entity performs activities related to refining, transformation, processing, importing, exporting, trading and the sale of hydrocarbons, petroleum products, natural gas and petrochemicals, as well as commercializes, distributes and trades methane, ethane and propylene, directly or through others; and
- Pemex Logistics: This entity provides transportation, storage and related services for crude oil, petroleum products and petrochemicals to PEMEX (as defined below) and other companies, through pipelines and maritime and terrestrial means, and provides guard and management services.

The principal distinction between the Subsidiary Entities and the Subsidiary Companies (as defined below) is that the Subsidiary Entities are productive state-owned entities, whereas the Subsidiary Companies are affiliate companies that were formed in accordance with the applicable laws of each of the respective jurisdictions in which they were incorporated.

The "Subsidiary Companies" are defined as those companies which are controlled, directly or indirectly, by Petróleos Mexicanos.

"Associates," as used herein, means those companies in which Petróleos Mexicanos has significant influence but not control or joint control over its financial and operating policies. Petróleos Mexicanos, the Subsidiary Entities and the Subsidiary Companies are referred to collectively herein as "PEMEX".

PEMEX's address and its principal place of business is: Av. Marina Nacional No. 329, Col. Verónica Anzures, Alcaldía Miguel Hidalgo, 11300, Ciudad de México, México.

NOTE 2. AUTHORIZATION AND BASIS OF PREPARATION

Authorization –

On April 22, 2022, these consolidated financial statements and the notes hereto were authorized for issuance by the following officers: Mr. Octavio Romero Oropeza, Chief Executive Officer, Act. Antonio López Velarde Loera, Acting Chief Financial Officer, Mr. Jose Maria del Olmo Blanco, Acting Deputy Director of Budgeting and Accounting, and Mr. Oscar René Orozco Piliado, Associate Managing Director of Accounting.

These consolidated financial statements and the notes hereto are issued pursuant to the terms of Article 13 Fraction VI of the Petróleos Mexicanos Law, Article 104 Fraction III, paragraph a, of the *Ley del Mercado de Valores* (Securities Market Law), and of Article 33 Fraction I, paragraph a, section 3 and Article 78 of the *Disposiciones de carácter general aplicables a las emisoras de valores y a otros participantes del mercado de valores* ("General provisions applicable to securities' issuers and other participants of the securities market").

Basis of preparation –

A. Statement of compliance

PEMEX prepared its consolidated financial statements as of December 31, 2021 and 2020, and for the years ended December 31, 2021, 2020 and 2019, in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB").

B. Basis of accounting

These consolidated financial statements have been prepared using the historical cost basis method, with the exception of the following items, which have been measured using an alternative basis.

ITEM	BASIS OF MEASUREMENT
Derivative Financial Instruments ("DFIs")	Fair Value
Employee Benefits	Fair Value of plan assets less present value of the obligation (defined benefit plan)

C. Going concern

The consolidated financial statements have been prepared on a going concern basis, which assumes that PEMEX will be able to continue its operations and can meet its payment obligations for a reasonable period (See Note 22-F).

D. Functional and reporting currency

These consolidated financial statements are presented in Mexican pesos, which is both PEMEX's functional currency and reporting currency, due to the following:

i. The economic environment in which PEMEX operates is Mexico, where the legal currency is the Mexican peso;

ii. The budget through which Petróleos Mexicanos and its Subsidiary Entities operate as entities of the Mexican Government, including the ceiling for personnel services, is elaborated, approved and exercised in Mexican pesos;

iii. Employee benefits provision was approximately 33% and 35% of PEMEX's total liabilities as of December 31, 2021 and 2020, respectively. This provision is computed, denominated and payable in Mexican pesos; and

iv. Cash flows for payment of general expenses, taxes and duties are realized in Mexican pesos.

Although the sales prices of certain products are based on international U.S. dollar-indices, final domestic selling prices are governed by the economic and financial policies established by the Mexican Government. Accordingly, cash flows from domestic sales are generated and received in Mexican pesos.

With regards to PEMEX's foreign currency (export sales, borrowings, etc.), Mexico's monetary policy regulator, the Banco de México ("Mexican Central Bank"), requires that Mexican Government entities other than financial entities sell their foreign currency to the Mexican Central Bank in accordance with its terms, receiving Mexican pesos in exchange, which is the currency of legal tender in Mexico.

Terms definition –

References in these consolidated financial statements and the related notes to "pesos" or "Ps." refers to Mexican pesos, "U.S. dollars" or "U.S.$" refers to dollars of the United States of America, "yen" or "¥" refers to Japanese yen, "euro" or "€" refers to the legal currency of the European Economic and Monetary Union, "pounds sterling" or "£" refers to the legal currency of the United Kingdom and "Swiss francs" or "CHF" refers to the legal currency of the Swiss Confederation. Figures in all currencies are presented in thousands of the relevant currency unit, except exchange rates and product and share prices.

E. Use of judgments and estimates

The preparation of the consolidated financial statements in accordance with IFRS requires the use of estimates and assumptions made by PEMEX's management that affect the recorded amounts of assets and liabilities and the disclosures of contingent assets and liabilities as of the date of these consolidated financial statements, as well as the recorded amounts of income, costs and expenses during the year. Actual results may differ from these estimates.

Significant estimates and underlying assumptions are reviewed, and the effects of such revisions are recognized in the years in which any estimates are revised and in any future periods affected by such revision.

Information about estimates, assumptions and critical accounting policies that have the most significant effects on the amounts recognized in the consolidated financial statements are described in the following notes:

i. Judgments, assumptions and estimation uncertainties

- Note 3-C Financial instruments – Fair Value and expected credit losses.
- Note 3-E Wells, pipelines, properties, plant and equipment – Useful lives.
- Note 3-F Intangible assets, wells not assigned to a reserve and oil and natural gas exploration and license, appraisal and development expenditure – successful efforts method.
- Note 3-H Impairment of non-financial assets – fair values, cash flow estimates and discount rates determination.
- Note 3-I Leases – Early cancellation or renewal options.
- Note 3-J Provisions – Environmental liabilities and retirement of assets.
- Note 3-K Employee benefits – Actuarial assumptions.
- Note 3-L Income taxes, duties and royalties – Recoverability assessment of deferred tax assets.
- Note 3-M Contingencies – Probability assessment.

ii. Measurement of fair values

Some of PEMEX's accounting policies and disclosures require the measurement of the fair values of financial assets and liabilities, as well as non-financial assets and liabilities.

PEMEX has an established control framework with respect to the measurement of fair values. This includes a valuation team that has overall responsibility for overseeing all significant fair value measurements, including Level 3 fair values.

The valuation team regularly reviews significant unobservable inputs and valuation adjustments. If third party information, such as broker quotes or pricing services, is used to measure fair values, then the valuation team assesses the evidence obtained from the third parties to support the conclusion that these valuations meet the requirements of IFRS, including the level in the fair value hierarchy in which the valuations should be classified.

When measuring the fair value of an asset or a liability, PEMEX uses market observable data as far as possible. Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows.

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities.

- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices).
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

If the inputs used to measure the fair value of an asset or a liability might be categorized in different levels of the fair value hierarchy, then the fair value measurement is categorized in its entirety in the same level of the fair value hierarchy as the lowest level input that is significant to the entire measurement.

PEMEX recognizes transfers between levels of the fair value hierarchy at the end of the reporting period during which the change has occurred.

F. Convenience translations

These consolidated financial statements are presented in Mexican pesos (reporting currency), which is the same as the recording currency and the functional currency of PEMEX. The U.S. dollar amounts shown in the consolidated statements of financial position, the consolidated statements of comprehensive income, the consolidated statements of changes in equity (deficit) and the consolidated statements of cash flows have been included solely for the convenience of the reader and are unaudited. Such amounts have been translated from amounts in pesos, as a matter of arithmetic computation only, at the exchange rate for the settlement of obligations in foreign currencies provided by the Mexican Central Bank and the *Secretaría de Hacienda y Crédito Público* ("Ministry of Finance and Public Credit" or "SHCP") at December 31, 2021 of Ps. 20.5835 per U.S. dollar. Translations herein should not be construed as a representation that the peso amounts have been or could be converted into U.S. dollars at the foregoing or any other rate.

NOTE 3. SIGNIFICANT ACCOUNTING POLICIES

PEMEX has consistently applied the following accounting policies to each of the periods presented in the preparation of its consolidated financial statements.

Below is a summary of the principal accounting policies:

A. Basis of consolidation

The consolidated financial statements include the financial statements of Petróleos Mexicanos and those of its subsidiaries over which it has control.

i. Business combinations

PEMEX accounts for business combinations using the acquisition method when the acquired set of activities and assets meets the definition of a business and control is transferred to PEMEX. In determining whether a particular set of activities and assets is a business, PEMEX assesses whether the set of assets and activities acquired includes, at a minimum, an input and substantive process and whether the acquired set has the ability to produce outputs.

PEMEX has an option to apply a 'concentration test' that permits a simplified assessment of whether an acquired set of activities and assets is not a business. The optional concentration test is met if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or group of similar identifiable assets.

The consideration transferred in the acquisition is generally measured at fair value, as are the identifiable net assets acquired. Any goodwill that arises is tested annually for impairment. Any gain on a bargain purchase is recognized in profit or loss immediately. Transaction costs are expensed as incurred, except if related to the issue of debt or equity securities.

The consideration transferred does not include amounts related to the settlement of pre-existing relationships. Such amounts are generally recognized in profit or loss.

Any contingent consideration is measured at fair value at the date of acquisition. If an obligation to pay contingent consideration that meets the definition of a financial instrument is classified as equity, then it is not remeasured and settlement is accounted for within equity. Otherwise, other contingent consideration is remeasured at fair value at each reporting date and subsequent changes in the fair value of the contingent consideration are recognized in profit or loss.

ii. Subsidiaries

Subsidiaries are entities controlled by PEMEX. PEMEX "controls" an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

For more information about the Subsidiary Companies, see Note 5.

iii. Non-controlling interests (NCI)

NCI are measured initially at their proportionate share of the acquiree's identifiable net assets at the date of acquisition. Changes in the ownership interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions.

iv. Loss of control

When PEMEX loses control over a subsidiary, it derecognizes the assets and liabilities of the subsidiary, and any related NCI and other components of equity. Any resulting gain or loss is recognized in profit or loss. Any interest retained in the former subsidiary is measured at fair value when control is lost.

v. Interests in equity-accounted investees

PEMEX's interests in equity-accounted investees comprise interests in associates and a joint venture.

Associates are those entities in which PEMEX has significant influence, but not control or joint control, over the financial and operating policies. A joint venture is an arrangement in which PEMEX has joint control, whereby PEMEX has rights to the net assets of the arrangement, rather than rights to its assets and obligations for its liabilities (joint operation).

Interests in associates and the joint venture are accounted for using the equity method. They are initially recognized at cost, which includes transaction costs. Subsequent to initial recognition, the consolidated financial statements include PEMEX's share of the profit or loss and other comprehensive income (OCI) of equity accounted investees, until the date on which significant influence or joint control ceases. Upon loss of significant influence over the associate or joint control over the joint venture, PEMEX measures and recognizes any retained investment at its fair value. Any difference between the carrying amount of the associate or joint venture upon loss of significant influence or joint control and the fair value of the retained investment and proceeds from disposal is recognized in profit or loss.

When the value of the share of losses exceeds the value of PEMEX's investment in an associate or joint venture, the carrying value of the investment, including any long-term investment, is reduced to zero and PEMEX ceases to recognize additional losses, except in cases where PEMEX is liable for obligations incurred by those associates and joint ventures. For more information about joint ventures and associates, see Note 12.

vi. Transactions eliminated on consolidation

Intra-group balances and transactions, and any unrealized income and expenses arising from intra-group transactions, are eliminated. Unrealized gains arising from transactions with equity-accounted investees are eliminated against the investment to the extent of the PEMEX interest in the investee. Unrealized losses are eliminated in the same way as unrealized gains, but only to the extent that there is no evidence of impairment.

B. Foreign currency

i. Foreign currency transactions

Transactions in foreign currencies are translated into the respective functional currencies of PEMEX companies at the exchange rates at the dates of the transactions.

Monetary assets and liabilities denominated in foreign currencies are translated into the functional currency at the exchange rate at the reporting date. Non-monetary assets and liabilities that are measured at fair value in a foreign currency are translated into the functional currency at the exchange rate when the fair value was determined. Non-monetary items that are measured based on historical cost in a foreign currency are translated at the exchange rate at the date of the transaction. Foreign currency differences are generally recognized in consolidated statements of comprehensive income and presented within foreign exchange.

ii. Foreign operation

The financial statements of foreign subsidiaries and associates are translated into the reporting currency by first identifying if the functional currency is different from the currency for recording the foreign operations, and, if so, the recording currency is translated into the functional currency and then into the reporting currency using the year-end exchange rate of each period for assets and liabilities reported in the consolidated statements of financial position; the historical exchange rate at the date of the transaction for equity items; and the exchange rate at the date of the transaction for income and expenses reported in the consolidated statement of comprehensive income.

Foreign currency differences are recognized in OCI and accumulated in the currency translation effect, except to the extent that the translation difference is allocated to NCI.

When a foreign operation is disposed of in its entirety or partially such that control, significant influence or joint control is lost, the cumulative amount in the translation reserve related to that foreign operation is reclassified to the consolidated statement of comprehensive income as part of the gain or loss on disposal. If PEMEX disposes of part of its interest in a subsidiary but retains control, then the relevant proportion of the cumulative amount is reattributed to NCI. When PEMEX disposes of only part of an associate or joint venture while retaining significant influence or joint control, the relevant proportion of the cumulative amount is reclassified to profit or loss.

C. Financial instruments

i. Recognition and initial measurement

Financial assets and liabilities, including accounts receivable and payable, are initially recognized when these assets are contractually originated or acquired, or when these liabilities are contractually issued or assumed.

Financial assets and financial liabilities (unless it is an account receivable or account payable without a significant financing component) are measured and initially recognized at fair value, in the case of financial assets or liabilities not measured at fair value with changes through OCI, plus the transaction costs directly attributable to acquisition or issuance, when subsequently measured at amortized cost. An account receivable or account payable without a significant financing component is initially measured at the transaction price. If PEMEX determines that the fair value at the initial recognition differs from the transaction price, PEMEX shall recognize the difference between the fair value at initial the recognition and the transaction price in the consolidated statements of comprehensive income.

ii. Classification and subsequent measurement

Financial Assets –

On initial recognition, a financial asset is classified as measured at: Amortized Cost; Fair Value Through Other Comprehensive Income ("FVTOCI")–debt investment; FVTOCI–equity investment; or Fair Value Through Profit or Loss ("FVTPL").

Financial assets are not reclassified subsequent to their initial recognition unless PEMEX changes its business model for managing financial assets, in which case all affected financial assets are reclassified on the first day of the first reporting period following the change in the business model.

FINANCIAL ASSETS	MEASUREMENT
Amortized cost	A financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at FVTPL: • it is held within a business model that has the objective of holding assets to collect contractual cash flows; and • its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.
Debt investment	A debt instrument is measured at FVTOCI only if it meets both of the following conditions and is not designated as at FVTPL: • it is held within a business model that has the objective of both collecting contractual cash flows and selling financial assets; and • its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.
Equity investment	On initial recognition of an equity investment that is not held for trading, PEMEX may irrevocably elect to present subsequent changes in fair value in OCI. This election is made on an investment-by-investment basis.

All financial assets not classified as measured at amortized cost or FVTOCI (as described above) are measured at FVTPL. This includes all derivative financial assets (see Note 18). On initial recognition, PEMEX may irrevocably designate a financial asset that otherwise meets the requirements to be measured at amortized cost or at FVOCI as FVTPL, if doing so eliminates or significantly reduces an accounting mismatch that would otherwise arise.

Financial assets: Business model assessment –

PEMEX makes an assessment of the objective of the business model in which a financial asset is held at a portfolio level because this best reflects the way the business is managed and information is provided to management. The information considered includes:

- the stated policies and objectives for the portfolio and the operation of those policies in practice, which include whether management's strategy focuses on earning contractual interest income, maintaining a particular interest rate profile, matching the duration of the financial assets to the duration of any related liabilities or expected cash outflows or realizing cash flows through the sale of the assets;
- how the performance of the portfolio is evaluated and reported to PEMEX management;
- the risk that affects the performance of the business model (and the financial assets held within that business model) and how those risks are managed;
- how managers of the business are compensated (e.g., whether compensation is based on the fair value of the assets managed or the contractual cash flows collected); and
- the frequency, volume and timing of sales in prior periods, the reasons for such sales and expectations about future sales activity.

Transfers of financial assets to third parties in transactions that do not qualify for derecognition are not considered sales for this purpose, consistent with PEMEX's continuing recognition of the assets.

Financial assets that are held for trading or managed and the performance of which is evaluated on a fair value basis are measured at FVTPL.

Financial Asset: Assessment whether contractual cash flows are solely payments of principal and interest –

For the purposes of this assessment, principal is defined as the fair value of the financial assets on initial recognition. Interest is defined as consideration for the time value of money and for the credit risk associated with the principal amount outstanding during the relevant period of time and for the basic lending risks and costs (e.g., liquidity risk and administrative costs), as well as profit margin.

In assessing whether the contractual cash flows are solely payments of principal and interest, PEMEX considers the contractual terms of the instrument, which includes assessing whether the financial asset contains a contractual term that could change the timing or amount of contractual cash flows such that it would not meet this condition. In making this assessment, PEMEX considers:

- contingent events that would change the amount or timing of cash flows;
- terms that may adjust the contractual coupon rate, including variable rate features;
- prepayment and extension features; and
- terms that limit PEMEX's claim to cash flows from specified assets (for example, non-recourse features).

A prepayment feature is consistent solely with the payments of principal and interest criterion if the prepayment amount substantially represents unpaid amounts of principal and interest on the principal amount outstanding, which may include reasonable additional compensation for early termination of the contract. Additionally, for a financial asset acquired at a significant discount or premium to its contractual par amount, a feature that permits or requires prepayment at an amount that substantially represents the contractual par amount plus accrued (but unpaid) contractual interest (which may also include reasonable additional compensation for early termination) is treated as consistent with this criterion if the fair value of the prepayment feature is insignificant at initial recognition.

Financial assets: Subsequent measurement and gain and losses –

Financial assets at FVTPL	Financial assets at FVTPL are measured at fair value and changes therein, including any interest or dividend income, are recognized in profit or loss.
Financial assets at amortized cost	These assets are subsequently measured at amortized cost using the effective interest method. The amortized cost is reduced by impairment losses. Interest income, foreign exchange gains and losses and impairment are recognized in profit or loss. Any gain or loss on derecognition is recognized in profit or loss.
Debt investments at FVOCI	These assets are subsequently measured at fair value. Interest income calculated using the effective interest method, foreign exchange gains and losses and impairment are recognized in profit or loss. Other net gains and losses are recognized in OCI. On derecognition, gains and losses accumulated in OCI are reclassified to profit or loss.
Equity investments at FVOCI	These assets are subsequently measured at fair value. Dividends are recognized as income in profit or loss unless the dividend clearly represents a recovery of part of the cost of the investment. Other net gains and losses are recognized in OCI and are never reclassified to profit or loss.

Financial liabilities: Classification, subsequent measurement and gains and losses –

Financial liabilities are classified as measured at amortized cost or FVTPL. A financial liability is classified as FVTPL if it is classified as held-for-trading, it is a derivative or it is designated as such on initial recognition. Financial liabilities at FVTPL are measured at fair value and net gains and losses, including any interest expense, are recognized in profit or loss. Other financial liabilities are subsequently measured at amortized cost using the effective interest method.

Interest expense and foreign exchange gains and losses are recognized in profit or loss. Any gain or loss on derecognition is also recognized in profit or loss.

iii. Derecognition

Financial assets –

PEMEX derecognizes a financial asset when the contractual rights to the cash flows from the financial asset expire, or it transfers the rights to receive the contractual cash flows in a transaction in which substantially all of the risks and rewards of ownership of the

financial asset are transferred or in which PEMEX neither transfers nor retains substantially all of the risks and rewards of ownership and it does not retain control of the financial asset.

PEMEX enters into transactions whereby it transfers assets recognized in its statement of financial position but retains either all or substantially all of the risks and rewards of the transferred assets. In these cases, the transferred assets are not derecognized.

Financial liabilities –

PEMEX derecognizes a financial liability when its contractual obligations are discharged, cancelled or expired. PEMEX also derecognizes a financial liability when its terms are modified and the cash flows of the modified liability are substantially different, in which case a new financial liability based on the modified terms is recognized at fair value.

On derecognition of a financial liability, the difference between the carrying amount extinguished and the consideration paid (including any non-cash assets transferred or liabilities assumed) is recognized in profit or loss.

Interest rate benchmark reform

When the basis for determining the contractual cash flows of a financial asset or financial liability measured at amortized cost changed as a result of interest rate benchmark reform, PEMEX updated the effective interest rate of the financial asset or financial liability to reflect the change that is required by the reform. A change in the basis for determining the contractual cash flows is required by interest rate benchmark reform if the following conditions are met:

- the change is necessary as a direct consequence of the reform; and
- the new basis for determining the contractual cash flows is economically equivalent to the previous basis – i.e. the basis immediately before the change.

When changes are made to a financial asset or financial liability in addition to changes to the basis for determining the contractual cash flows required by interest rate benchmark reform, PEMEX first updates the effective interest rate of the financial asset or financial liability to reflect the change that is required by interest rate benchmark reform. After that, PEMEX applies the policies on accounting for modifications to the additional changes.

iv. Offsetting

Financial assets and financial liabilities are offset, and the net amount is presented in the statement of financial position when, and only when, PEMEX has a legally enforceable right to set off the amounts and it intends either to settle them on a net basis or to realize the asset and settle the liability simultaneously.

v. Derivative financial instruments and hedge accounting

PEMEX uses DFIs to hedge the risk exposure in foreign currency, interest rate and the price of commodities related to its products. Embedded derivatives are separated from the host contract and accounted for separately if the host contract is not a financial asset and certain criteria are met.

These contracts are not accounted as designated hedging instruments. DFIs are accounted for as financial assets when the fair value is positive and as a financial liability when the fair value is negative.

vi. Impairment

Financial instruments and contract assets –

PEMEX recognizes loss allowances for Estimated Credit Losses (“ECLs”) on:

- financial assets measured at amortized cost;
- debt investments measured at FVOCI; and
- contract assets.

PEMEX measures loss allowances at an amount equal to lifetime ECL, except for the following, which are measured as 12-month ECLs:

- debt securities that are determined to have low credit risk at the reporting date; and
- other debt securities and bank balances for which credit risk (i.e. the risk of default occurring over the expected life of the financial instrument) has not increased significantly since initial recognition.

PEMEX considers a financial asset to be in default when the debtor is unlikely to pay its credit obligations to PEMEX in full, without recourse by PEMEX to actions such as guarantee redemption (if any is held).

PEMEX considers that a debt instrument has a low credit risk, when its credit rating is classified as "investment grade."

The investment grade classification is based on minimum credit ratings of Baa3 (Moody's) and BBB- (S&P and Fitch), as well as its equivalent in other rating agencies.

Lifetime ECLs are the credit losses that result from all possible default events over the expected life of a financial instrument.

12-month ECLs are the portion of ECLs that result from default events that are possible within the 12 months after the reporting date (or a shorter period if the expected life of the instrument is less than 12 months).

The maximum period considered when estimating ECLs is the maximum contractual period over which PEMEX is exposed to credit risk.

Measurement of ECLs –

ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (for example, the difference between the cash flows due to the entity in accordance with the contract and the cash flows that PEMEX expects to receive).

ECLs are discounted at the effective interest rate of the financial asset.

Credit-impaired financial assets –

At each reporting date, PEMEX assesses whether financial assets carried at amortized cost and debt securities at FVOCI are credit-impaired. A financial asset is 'credit-impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred.

Evidence that a financial asset is credit-impaired includes the following observable data:

- significant financial difficulty of the borrower or issuer;
- a breach of contract such as a default or being more than 90 days past due;
- the restructuring of a loan or advance by PEMEX on terms that it would not consider otherwise;
- it is probable that the borrower will enter bankruptcy or other financial reorganization; or
- the disappearance of an active market for a security because of financial difficulties.

Presentation of allowance for ECL in the statement of financial position –

Loss allowances for financial assets measured at amortized cost are deducted from the gross carrying amount of the assets.

Write-off –

The gross carrying amount of a financial asset is written off when PEMEX has no reasonable expectation of recovering a financial asset in its entirety or a portion thereof. In the case of individual customers, PEMEX's policy is to cancel the gross carrying amount when the financial asset has met the uncollectibility report as established in the Políticas Generales y Procedimientos para Cancelar Adeudos (Procedure to write-off financial assets). For corporate customers, PEMEX individually makes an assessment with respect to the timing and amount of write-off based on whether there is a reasonable expectation of recovery. However, financial assets that are

written off could still be subject to enforcement activities in order to comply with the PEMEX's procedures for recovery of amounts due.

D. Inventories and cost of sales

Inventories are valued at the lower of cost or net realizable value. Cost is determined based on the cost of production or acquisition of inventory and other costs incurred in transporting such inventory to its present location and in its present condition, using the average cost method. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated selling costs. The estimate takes into consideration, among other things, the decrease in the value of inventories due to obsolescence.

Cost of sales represents the cost of production or acquisition of inventories at the time of sale, increased, where appropriate, by declines in net realizable value of inventories during the year.

Advance payment to suppliers for inventory purchases are recognized as part of inventory when the risks and benefits of the ownership of the inventory have been transferred to PEMEX.

E. Wells, pipelines, properties, plant and equipment

i. Recognition and measurement

Items of wells, pipelines, properties, plant and equipment are recorded at acquisition or construction cost, which includes capitalized borrowing cost, less accumulated depreciation and accumulated impairment losses.

Initial costs of wells, pipelines, properties, plant and equipment are initially recorded at cost, which includes their original purchase price or construction cost, any costs attributable to bringing the assets to a working condition for their intended use and the costs of dismantling and removing the items and restoring the site on which they are located, including the estimated cost of plugging and abandoning wells.

The cost of financing projects that require large investments and financing incurred for projects, net of interest revenues from the temporary investment of these funds, is recognized as part of wells, pipelines, properties, plant and equipment when the cost is directly attributable to the construction or acquisition of a qualifying asset. The capitalization of these costs is suspended during periods in which the development of construction is interrupted, and its capitalization ends when the activities necessary for the use of the qualifying asset are substantially completed. All other financing costs are recognized in the consolidated statements of comprehensive income in the period in which they are incurred.

The cost of self-constructed assets includes the cost of materials and direct labor, interest on financing and any other costs directly attributable to start up. In some cases, the cost also includes costs of plugging of wells and removal at present value.

Expenditures related to the construction of wells, pipelines, properties, plant and equipment during the stage prior to commissioning are stated at cost as intangible assets or construction in progress, in accordance with the characteristics of the asset. Once the assets are ready for use, they are transferred to the respective component of wells, pipelines, properties, plant and equipment and depreciation or amortization begins.

If significant parts of an item of wells, pipelines, properties, plant and equipment have different useful lives, then they are accounted for as separate items (major components) of property, plant and equipment.

Any gain or loss on disposal of an item of wells, pipelines, properties, plant and equipment is recognized in profit or loss.

Advance payments for the acquisition of pipelines, properties, plant and equipment are also recognized in the line item of wells, pipelines, properties, plant and equipment when the risks and benefits of the ownership have been transferred to PEMEX.

ii. Subsequent expenditure

The costs of major maintenance or replacement of a significant component of an item of wells, pipelines, properties, plant and equipment are recognized in the carrying amount of the item if it is probable that the future economic benefits embodied within the component will flow to PEMEX and its cost can be measured reliably. The costs of recurring maintenance, repairs and renovations of wells, pipelines, properties, plant and equipment carried out to maintain the facilities in normal operation conditions are recognized in profit or loss as incurred.

iii. Depreciation

Depreciation and amortization of capitalized costs in wells are determined based on the estimated economic life of the field to which the wells belong, considering the relationship between the production of barrels of oil equivalent for the period and proved developed reserves of the field, as of the beginning of the period, with quarterly updates for new development investments.

Depreciation of other elements of pipelines, properties, plant and equipment is recognized in profit or loss on a straight-line basis over the estimated useful life of the asset, beginning as of the date that the asset is available for use, or in the case of construction, from the date that the asset is completed and ready for use.

The estimated useful lives of wells, pipelines, properties, plant and equipment for current and comparative periods are described in Note 13. Estimated useful lives of items of properties, plant and equipment are reviewed and updated prospectively if expectations differ from previous estimates.

F. Intangible assets and oil and natural gas exploration and license, appraisal and development expenditure

i. Intangible assets

Intangible assets acquired separately are measured at initial recognition at their acquisition cost. After the initial recognition, intangible assets are valued at their acquisition cost, less: (i) accumulated amortization, under the straight-line method during the estimated useful life of the intangible asset and (ii) accumulated impairment losses.

Subsequent expenditure is capitalized only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure is recognized in profit or loss as incurred.

Amortization is calculated to write off the cost of intangible assets less their estimated residual values using the straight-line method over their estimated useful lives and is generally recognized in profit or loss.

Software licenses are amortized over the lesser of their contract period or the remaining life of the asset to which they are associated.

The estimated useful lives of elements of intangible assets for current and comparative periods are described in Note 14.

The estimated useful lives and residual values of intangible assets are reviewed at each reporting date and adjusted if appropriate.

ii. Wells not assigned to a reserve, oil and natural gas exploration, appraisal and development expenditure

a. Wells not assigned to a reserve

   Wells not assigned to a reserve mainly include drilling, evaluation and development costs for oil and natural gas, and rights-of-way.

b. Oil and natural gas exploration, appraisal and development expenditures

   Oil and natural gas exploration, evaluation and development expenses are accounted for using the principles of the successful efforts method of accounting, as described below:

Successful Efforts Method –

Pemex Exploration and Production applies IFRS 6 - Exploration and Evaluation of Mineral Resources, which allows an entity to develop an accounting policy for exploration and evaluation assets. Therefore, Pemex Exploration and Production uses the method of successful efforts, which requires a cause and effect relationship between the costs incurred and the recognition of specific reserves. Generally, if a cost is incurred without an identifiable future benefit, it is charged to expenses.

Before PEMEX is able to determine the accounting treatment of a cost, it must be classified as a property acquisition, exploration, development or production cost.

Exploration and appraisal expenditure –

Geological and geophysical exploration costs including topographic costs, geological studies, property access rights, remuneration and expenses of geologists and geophysicists are charged to expenses as incurred.

Costs directly associated with an exploration well, other than the costs mentioned in the preceding paragraph, are initially capitalized as an intangible asset (wells not assigned to a reserve) until the drilling of the well is complete and the results have been evaluated. These costs include employee compensation, materials and fuel used, platform costs and payments made to contractors.

If potentially commercial quantities of hydrocarbons are not found, the exploration well costs are written off against profit or loss. If hydrocarbons are found and, subject to additional assessment activity, are likely to be capable of commercial development, the costs continue to be carried as an asset. If it is determined that development will not occur, then the costs are expensed against profit or loss.

Costs directly associated with the evaluation activity performed to determine the size, characteristics and commercial potential of a reserve after the initial hydrocarbon discovery, including the costs of evaluation of wells where no hydrocarbons were found, are initially capitalized as an intangible asset (wells not assigned to a reserve). When proved reserves of oil and natural gas are determined and development is approved by management, the relevant expenditure is transferred to wells, pipelines, properties, plant and equipment.

Exploration wells more than 12 months old are recognized as an expense unless: (a)(i) they are in an area requiring major capital expenditure before production can begin, (ii) commercially productive quantities of reserves have been found, and (iii) they are subject to further exploration or appraisal activity, in that, either drilling or additional exploration wells are underway or firmly planned for the near future or (b) proved reserves are viable within 12 months of completion of the exploratory drilling.

Development expenditure –

Expenditure on the construction, installation and completion of infrastructure facilities such as platforms, pipelines and the drilling of development wells, including service and unsuccessful development or delineation wells, is capitalized within wells, pipelines, properties, plant and equipment and is depreciated from the commencement of production as described in the accounting policy for wells, pipelines, properties, plant and equipment.

Exploration –

Exploration includes all expenses related to the search for oil and / or gas reserves, including depreciation and applicable costs of supporting equipment and facilities, and the costs of drilling exploratory wells and exploratory stratigraphic wells. Some exploration costs are charged directly to expenses when they occur, such as the costs of maintaining unexploited properties, since such costs do not increase the possibilities that said lands contain proven reserves. The costs of geologists, topographers and geophysicists, including wages and other related expenses, are also charged directly to expenses when they occur because they do not represent the acquisition of an identifiable asset since these studies represent research expenses.

All costs for drilling exploratory wells are capitalized and classified as wells, pipelines, property, plant and equipment, not associated with a reserve, until it is determined whether or not a well has proven reserves. Once the exploratory wells are completed, the future treatment of these costs is determined.

Development –

Development costs are associated with previously discovered proven reserves, with previously known future benefits. Therefore, all costs incurred in development activities must be capitalized. Development includes all costs incurred in creating a system of productive wells, related equipment, and facilities in proven reserves so that oil and / or gas can be extracted. Developmental costs are related to specific proven reserves. The cost of building roads to gain access to proven reserves is a development cost, as is the cost of providing facilities for the extraction, treatment, collection and storage of oil and / or gas. Developmental costs also include depreciation and operating costs of equipment and facilities used in developmental activities. Likewise, non-productive development wells are capitalized, since they are considered as a cost of creating the total production system for proven reserves.

Production –

Production includes the costs incurred to raise oil and / or gas to the surface, its collection, treatment, processing and field storage.

The production function ends in the storage tank of the production field or, in exceptional circumstances, at the first point of delivery of the oil and / or gas to the main line, refinery, marine terminal or common transport.

G. Crude oil and natural gas reserves

Under Mexican law, all crude oil and other hydrocarbon reserves located in the subsoil of Mexico are owned by the Mexican nation and not by PEMEX. In accordance with the aforementioned and based on the applicable regulation as of the date of these consolidated financial statements, the reserves assigned to PEMEX by the Mexican Government are not registered for accounting purposes because they are not PEMEX's property. PEMEX estimates total proved oil and natural gas reserve volumes in accordance with the definitions, methods and procedures established in Rule 4-10(a) of Regulation S-X ("Rule 4-10(a)") of the U.S. Securities and Exchange Commission ("SEC"), as amended, and where necessary, in accordance with the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information promulgated by the Society of Petroleum Engineers (the "SPE") as of February 19, 2007. These procedures are consistent with international reserves reporting practice. The estimation of these reserves depends on assumptions made and the interpretation of the data available and may vary among analysts. The results of drilling activities, test wells and production after the date of estimation are utilized in future revisions of reserves estimates.

Although PEMEX does not own the oil and other hydrocarbon reserves within Mexico, these procedures allow PEMEX to record the effects that such oil and other hydrocarbon reserves have on its consolidated financial statements, including, for example, in the depreciation and amortization line item.

H. Impairment of non-financial assets

The carrying amounts of PEMEX's non-financial assets, other than inventories and deferred taxes, are assessed for indicators of impairment at the end of each reporting period. If the net carrying value of the asset or its cash-generating unit exceeds the recoverable amount, PEMEX records an impairment charge in profit or loss.

A cash-generating unit is the smallest identifiable group of assets which can generate cash flows independently from other assets or groups of assets.

The recoverable amount of an asset or a Cash-Generating Unit ("CGU") is defined as the higher of its fair value minus the costs of disposal and its value in use. The value in use is the discounted present value of the net future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. In measuring value in use, the discount rate applied is the pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the asset. Fair value is calculated using discounted cash flows determined by the assumptions that market participants would apply in order to estimate the price of an asset or CGU, assuming that such participants were acting in their best economic interest.

In the case of cash-generating assets or items dedicated to the exploration and evaluation of hydrocarbons reserves, the recoverable amount is determined using the value in use based on the proved reserves and probable reserves, in some cases, for the risk factor associated with such reserves.

Both impairment losses and reversals are recognized in the statement of comprehensive income in the costs and expenses line items in which the depreciation and amortization are recognized. Impairment losses may not be presented as part of the costs that have been capitalized in the value of any asset. Impairment losses related to inventories are recognized as part of cost of sales. Impairment losses on investments in associates, joint ventures and other investments are recognized as profit (loss) sharing in associates.

An impairment loss shall be reversed if there has been a change in the estimates used since the date when the impairment loss was recognized. These reversals will not exceed the carrying value of the asset as though no impairment had been recognized. Impairment losses and reversals are presented in a separate line item in the consolidated statement of comprehensive income.

I. Leases

At the inception of a contract, PEMEX assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. To assess whether a contract conveys the right to control the use of an identified asset, PEMEX uses the definition of a lease in IFRS 16.

i. As a lessee –

At commencement or on modification of a contract that contains a lease component, PEMEX allocates the consideration in the contract to each lease component on the basis of its relative stand-alone prices. However, PEMEX has elected for some leases not to separate non-lease components and to account for the lease and non-lease components as a single lease component.

PEMEX recognizes a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the lesser of the straight-line method and the hours of use method, from the commencement date to the end of the lease term, unless the lease transfers ownership of the underlying asset to PEMEX by the end of the lease term or the cost of the right-of-use asset reflects that PEMEX will exercise a purchase option. In that case, the right-of-use asset will be depreciated over the useful life of the underlying asset, which is determined on the same basis as those of property and equipment. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for certain remeasurements of the lease liability. Useful lives are shown in Note 17.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, PEMEX's incremental borrowing rate. Generally, PEMEX uses its incremental borrowing rate as the discount rate.

PEMEX determines its incremental borrowing rate by obtaining interest rates from various external financing sources and makes certain adjustments to reflect the terms of the lease and type of the asset leased.

Lease payments included in the measurement of the lease liability comprise the following:

- fixed payments, including in-substance fixed payments;
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- amounts expected to be payable under a residual value guarantee; and
- the exercise price under a purchase option that PEMEX is reasonably certain to exercise, lease payments in an optional renewal period if PEMEX is reasonably certain to exercise an extension option, and penalties for early termination of a lease unless PEMEX is reasonably certain not to terminate early.

The lease liability is measured at amortized cost using the effective interest method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in PEMEX's estimate of the amount expected to be payable under a residual value guarantee, if PEMEX changes its assessment of whether it will exercise a purchase, extension or termination option or if there is a revised in-substance fixed lease payment.

When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

From January 1, 2021, PEMEX began remeasuring its lease liability by discounting the revised lease payments using the revised discount rate that reflects the change to an alternative benchmark interest rate. This change reflects the requirements of the interest rate benchmark reform, which adjusted the basis for determining future lease payments.

PEMEX presents separately the right-of-use assets and lease liabilities in the statement of financial position.

Short-term leases and leases of low-value assets –

PEMEX has elected not to recognize right-of-use assets and lease liabilities for leases of low-value assets and short-term leases. PEMEX recognizes the lease payments associated with these leases as an expense on a straight-line basis over the lease term.

ii. As a lessor –

At inception or upon modification of a contract that contains a lease component, PEMEX allocates the consideration in the contract to each lease component on the basis of their relative stand-alone prices.

When PEMEX acts as a lessor, it determines at lease inception whether each lease is a finance lease or an operating lease.

To classify each lease, PEMEX makes an overall assessment of whether the lease transfers substantially all of the risks and rewards incidental to ownership of the underlying asset. If this is the case, then the lease is a finance lease; if not, then it is an operating lease.

As part of this assessment, PEMEX considers certain indicators such as whether the lease is for the major part of the economic life of the asset.

If an arrangement contains lease and non-lease components, then PEMEX applies IFRS 15 to allocate the consideration in the contract.

PEMEX applies the derecognition and impairment requirements in IFRS 9 to the net investment in the lease. Further, PEMEX regularly reviews estimated unguaranteed residual values used in calculating the gross investment in the lease.

PEMEX recognizes lease payments received under operating leases as income on a straight-line basis over the lease term as part of "other revenue."

J. Provisions

Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The unwinding of the discount is recognized as finance cost.

PEMEX recognizes provisions when, as a result of a past event, PEMEX has incurred a legal or assumed present obligation for which a future disbursement is probable and the value of such disbursement is reasonably estimable. In certain cases, such amounts are recorded at their present value.

Increases in ongoing legal expense liabilities are recognized in the Consolidated Statement of Comprehensive Income in the "Other expenses" line item.

Environmental liabilities –

In accordance with applicable legal requirements and accounting practices, an environmental liability is recognized when the cash outflows are probable and the amount is reasonably estimable. Disbursements related to the conservation of the environment that are linked to revenue from current or future operations are accounted as expenses or assets, depending on the circumstances of each disbursement. Disbursements related to past operations, which no longer contribute to current or future revenues, are accounted for as current period expenses.

The accrual of a liability for a future disbursement occurs when an obligation related to environmental remediation, for which PEMEX has the information necessary to determine a reasonable estimated cost, is identified. Increases in environmental liabilities are recognized in the Consolidated Statement of Comprehensive Income in the "Cost of sales" line item.

Retirement of assets –

The obligations associated with the future retirement of assets, including those related to the retirement of wells, pipelines, properties, plant and equipment and their components are recognized at the date that the retirement obligation is incurred, based on the discounted cash flow method. The determination of the fair value is based on existing technology and regulations. If a reliable estimation of fair value cannot be made at the time the obligation is incurred, the accrual will be recognized when there is sufficient information to estimate the fair value.

The obligations related to the costs of future retirement of assets associated with the principal refining processes for gas and petrochemicals are not recognized. These assets are considered to have an indefinite useful life due to the potential for maintenance and repairs.

The abandonment costs related to wells currently in production and wells temporarily closed are recorded in the statement of comprehensive income based on the units of production method. Total cost of abandonment and plugging for non-producing wells is recognized in the statement of comprehensive income at the end of each period. All estimations are based on the useful lives of the wells, considering their discounted present value. Salvage values are not considered, as these values commonly have not traditionally existed. Increases in retirement of assets liabilities are recognized as part of the cost of completed wells in fixed assets.

K. Employee benefits

i. Short-term employee benefits

Short-term employee benefits are expensed as the related service is provided. A liability is recognized for the amount expected to be paid if PEMEX has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

ii. Defined contribution plans

Obligations for contributions to defined contribution plans are expensed as the related service is provided. Prepaid contributions are recognized as an asset to the extent that a cash refund or a reduction in future payments is available.

iii. Defined benefit plan

PEMEX's net obligation in respect of defined benefit plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in the current and prior periods, discounting that amount and deducting the fair value of any plan assets.

The calculation of defined benefit obligations is performed annually by a qualified actuary using the projected unit credit method. When the calculation results in a potential asset for PEMEX, the recognized asset is limited to the present value of economic benefits available in the form of any future refunds from the plan or reductions in future contributions to the plan. To calculate the present value of economic benefits, consideration is given to any applicable minimum funding requirements.

New remeasurements of the net defined benefit liability, which comprise actuarial gains and losses, the return on plan assets (excluding interest) and the effect of the asset ceiling (if any, excluding interest), are recognized immediately in OCI. PEMEX determines the net interest expense (income) on the net defined benefit liability (asset) for the period by applying the discount rate used to measure the defined benefit obligation at the beginning of the annual period to the net defined benefit liability (asset) at such time, taking into account any changes in the net defined benefit liability (asset) during the period as a result of contributions and benefit payments. Net interest expense and other expenses related to defined benefit plans are recognized in profit or loss.

When the benefits of a plan are changed or when a plan is curtailed, the resulting change in benefit that relates to past service or the gain or loss on curtailment is recognized immediately in profit or loss. PEMEX recognizes gains and losses from the settlement of a defined benefit plan when the settlement occurs.

iv. Other long-term employee benefits

PEMEX's net obligation in respect of long-term employee benefits is the amount of future benefit that employees have earned in return for their service in the current and prior periods. That benefit is discounted to determine its present value. New remeasurements are recognized in profit or loss in the period in which they arise.

v. Termination benefits

Termination benefits are expensed at the earlier of when PEMEX can no longer withdraw its offer of those benefits and when PEMEX recognizes costs for a restructuring. If benefits are not expected to be settled in full within 12 months of the reporting date, then they are discounted.

L. Income taxes, duties and royalties

Income tax expense comprises current and deferred tax. It is recognized in profit or loss except to the extent that it relates to a business combination, or items recognized directly in equity or in OCI.

The interest and penalties related to income taxes, including uncertain tax treatments, do not meet the definition of income taxes, and are therefore accounted for under IAS 37 "Provisions, Contingent Liabilities and Contingent Assets."

i. Current income tax

Current income tax comprises the expected tax payable or receivable on the taxable income or loss for the year and any adjustment to the tax payable or receivable in respect of previous years. The amount of current tax payable or receivable is the best estimate of the

tax amount expected to be paid or received that reflects uncertainty related to income taxes, if any. It is measured using tax rates enacted or substantively enacted at the reporting date. Current tax also includes any tax arising from dividends.

Current tax assets and liabilities are offset only if certain criteria are met.

ii. Deferred income tax

Deferred income tax is recognized in respect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax is not recognized for:

- temporary differences on the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profit or loss;
- temporary differences related to investments in subsidiaries, associates and joint arrangements to the extent that PEMEX is able to control the timing of the reversal of the temporary differences and it is probable that they will not reverse in the foreseeable future; and
- taxable temporary differences arising from the initial recognition of goodwill.

Temporary differences in relation to a right-of-use asset and a lease liability for a specific lease are regarded as a net package (the lease) for the purpose of recognizing deferred tax.

Deferred tax assets are recognized for unused tax losses, unused tax credits and deductible temporary differences to the extent that it is probable that future taxable profits will be available against which they can be used. Future taxable profits are determined based on the reversal of relevant taxable temporary differences. If the amount of taxable temporary differences is insufficient to recognize a deferred tax asset in full, then future taxable profits, adjusted for reversals of existing temporary differences, are considered, based on the business plans of PEMEX. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefit will be realized. Such reductions are reversed when the probability of future taxable profits improves.

Unrecognized deferred tax assets are reassessed at each reporting date and recognized to the extent that it has become probable that future taxable profits will be available against which they can be used.

Deferred tax is measured at the tax rates that are expected to be applied to temporary differences when they reverse, using tax rates enacted or substantively enacted at the reporting date.

The measurement of deferred tax reflects the tax consequences that would follow from the manner in which PEMEX expects, at the reporting date, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset only if certain criteria are met.

iii. Duties, royalties and considerations

Duties –

PEMEX is subject to taxes and special duties, which are based on the value of hydrocarbons extracted, with certain deductions.

These taxes and duties are recognized in accordance with IAS 12 “Income Taxes” (IAS 12) when they have the characteristics of income tax, which occurs when such taxes are set by a government authority and are determined based on a formula that considers the balance of income (or extraction valued at a selling price) less expenses. Taxes and duties that meet these criteria are recognized for current and deferred income tax based on the above paragraphs.

Taxes and duties that do not meet these criteria are recognized in costs and expenses relating to the transactions that gave rise to them.

Royalties and considerations –

Royalties and considerations are payable pursuant to license agreements. These royalties are recognized as liabilities and affect the items of costs and expenses related to the operations that gave rise to them.

M. Contingencies

Contingency losses are recorded when it is probable that a liability has been incurred and the amount thereof can be reasonably estimated. When a reasonable estimation cannot be made, qualitative disclosure is provided in the notes to the consolidated financial statements. Contingent assets are not recognized until realization is assured.

N. Fair value

'Fair value' is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date in the principal or, in its absence, the most advantageous market to which PEMEX has access at that date. The fair value of a liability reflects its non-performance risk.

A number of PEMEX accounting policies and disclosures require the measurement of fair values, for both financial and non-financial assets and liabilities (see Note 8).

When one is available, PEMEX measures the fair value of an instrument using the quoted price in an active market for that instrument. A market is regarded as 'active' if transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis.

If there is no quoted price in an active market, then PEMEX uses valuation techniques that maximize the use of relevant observable inputs and minimize the use of unobservable inputs. The chosen valuation technique incorporates all of the factors that market participants would take into account in pricing a transaction.

If an asset or a liability measured at fair value has a bid price and an ask price, then PEMEX measures assets and long positions at the bid price and liabilities and short positions at the ask price.

The best evidence of the fair value of a financial instrument on initial recognition is normally the transaction price (i.e., the fair value of the consideration given or received in a third-party transaction). If PEMEX determines that the fair value on initial recognition differs from the transaction price and the fair value is evidenced neither by a quoted price in an active market for an identical asset or liability nor based on a valuation technique for which any unobservable inputs are judged to be insignificant in relation to the measurement, then the financial instrument is initially measured at fair value, adjusted to defer the difference between the fair value on initial recognition and the transaction price. Subsequently, that difference is recognized in profit or loss on an appropriate basis over the life of the instrument but no later than when the valuation is fully supported by observable market data or the transaction is closed out.

O. Revenue from contracts with customers

Revenue is measured based on the consideration specified in a contract with a customer. PEMEX recognizes revenue when it transfers control over a good or service to a customer (see Note 7).

P. Operating segments

Operating segments are identifiable components of PEMEX that pursue business activities from which PEMEX earns revenues and incurs expenses and for which information is available to management on a segmented basis and is assessed by the Board of Directors in order to allocate resources and assess the profitability of the segments.

Q. Presentation of consolidated statements of comprehensive income

Costs and expenses shown in PEMEX's consolidated statements of income are presented based on their function, which allows for a better understanding of the components of PEMEX's operating income. This classification allows for a comparison to the industry to which PEMEX belongs.

i. Operating profit

Operating profit is the result generated from the continuing principal revenue-producing activities of PEMEX as well as other income and expenses related to operating activities. Operating profit excludes net finance costs, share of profit of equity-accounted investees and income taxes and duties.

Revenues –

Represents revenues from the sale of products or services.

Cost of sales –

Cost of sales represents the acquisition and production costs of inventories, depreciation, amortization, salaries, wages and benefits, a portion of the cost of the reserve for employee benefits and operating expenses related to the production process, production taxes and duties, exploration costs, non-operating costs, among others.

Other revenues and other expenses –

Other revenues and other expenses consist primarily of income and expenses that are not related directly to the operation of PEMEX.

Transportation, distribution and sale expenses –

Transportation, distribution and sale expenses are costs in connection with the storage, sale and delivery of products, such as the depreciation and operating expenses associated with these activities.

Administrative expenses –

Administrative expenses are costs related to PEMEX's areas that provide administrative support.

ii. Financing income and financing cost and derivative financial instruments income (cost), net

Financing income –

Financing income is comprised of interest income, financial income and other income from financial operations between PEMEX and third parties.

Financing cost –

Financing cost is comprised of interest expenses, commissions and other expenses related to PEMEX's financing operations less any portion of the financing cost that is capitalized.

When calculating interest income and expenses, the effective interest rate is applied to the gross carrying amount of the asset (when the asset has no credit impairment), to the amortized cost of the liability or to the present value lease liabilities. However, for financial assets with credit impairment after initial recognition, interest income is calculated by applying the effective interest rate at the amortized cost of the financial asset. If the asset ceases to be impaired, the interest income calculation returns to the gross base.

NOTE 4. ACCOUNTING CHANGES-

Accounting changes

Accounting changes as of January 1, 2021

PEMEX initially adopted Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16) ("Phase 2 Amendments") starting on January 1, 2021.

PEMEX applied the Phase 2 Amendments retrospectively. However, in accordance with the exceptions permitted in the Phase 2 Amendments, PEMEX has elected not to restate comparatives for the prior periods to reflect the application of these amendments. Since PEMEX had no transactions for which the benchmark rate had been replaced with an alternative benchmark rate as of December 31, 2020, there is no impact on opening equity balances as a result of retrospective application.

Specific policies applicable from January 1, 2021 for interest rate benchmark reform

The Phase 2 Amendments provide practical exemptions from certain IFRS requirements. These exceptions relate to modifications of financial instruments and lease contracts or hedging relationships triggered by a replacement of a benchmark interest rate in a contract with a new alternative benchmark rate.

If the basis for determining the contractual cash flows of a financial asset or financial liability measured at amortized cost changed as a result of interest rate benchmark reform, then PEMEX updated the effective interest rate of the financial asset or financial liability to reflect the change that is required by the reform. A change in the basis for determining the contractual cash flows is required by interest rate benchmark reform if the following conditions are met:

- the change is necessary as a direct consequence of the reform; and
- the new basis for determining the contractual cash flows is economically equivalent to the previous basis – i.e. the basis immediately before the change

When changes were made to a financial asset or financial liability in addition to changes to the basis for determining the contractual cash flows required by interest rate benchmark reform, PEMEX first updated the effective interest rate of the financial asset or financial liability to reflect the change that is required by interest rate benchmark reform. After that, the PEMEX applied the policies on accounting for modifications to the additional changes.

The amendments also provide an exception to use a revised discount rate that reflects the change in interest rate when remeasuring a lease liability because of a lease modification that is required by interest rate benchmark reform.

Finally, the Phase 2 Amendments provide a series of temporary exceptions from certain hedge accounting requirements when a change required by interest rate benchmark reform occurs to a hedged item and/or hedging instrument that permits the hedging relationship to be continued without interruption. Until now, PEMEX had no hedging transactions.

The details of the accounting policies are disclosed in Note 3(C) Financial Instruments and (I) Leases. See also Note 18 for related disclosures about risks, financial assets and financial liabilities indexed to LIBOR.

NOTE 5. SUBSIDIARY ENTITIES AND SUBSIDIARY COMPANIES

As of December 31, 2021 and 2020, the Subsidiary Entities consolidated in these financial statements include Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics. Former Subsidiary Entity, Pemex Fertilizers, was also consolidated in these financial statements until December 31, 2020. Former Subsidiary Entities, Pemex Drilling and Services and Pemex Ethylene were also consolidated in these financial statements until June 30, 2019.

As of December 31, 2021 and 2020, the consolidated Subsidiary Companies are as follows:

- PEP Marine, DAC. ("PEP DAC") (v)(xi)
- P.M.I. Holdings, B.V. ("PMI HBV") (i)(vii)(xii) (xv)
- P.M.I. Trading DAC ("PMI Trading") (i)(vii)(xi)
- P.M.I. Holdings Petróleos España, S. L. ("HPE") (i)(vii)(ix)
- P.M.I. Services North America, Inc. ("PMI SUS") (i)(vii)(x)
- P.M.I. Norteamérica, S. A. de C. V. ("PMI NASA") (i)(vii)(viii)
- P.M.I. Comercio Internacional, S. A. de C. V. ("PMI CIM") (i)(ii)(viii)
- PMI Campos Maduros SANMA, S. de R. L. de C. V. ("SANMA") (vii)(viii)
- Pro-Agroindustria, S. A. de C. V. ("AGRO") (vii)(viii)
- PTI Infraestructura de Desarrollo, S. A. de C. V. ("PTI ID") (vi)(vii)(viii)
- P.M.I. Cinturón Transoceánico Gas Natural, S. A. de C. V. ("PMI CT")(i)(iii)
- P.M.I. Transoceánico Gas LP, S. A. de C. V. ("PMI TG")(i)(iii)
- P.M.I. Servicios Portuarios Transoceánico, S. A. de C. V. ("PMI SP") (i)(vii)(viii)
- P.M.I. Midstream del Centro, S. A. de C. V. ("PMI MC") (i)(vi)
- Pemex Procurement International, Inc. ("PPI")(vii)(x)
- Hijos de J. Barreras, S. A. ("HJ BARRERAS") (ii)(iv)
- Pemex Finance, Ltd. ("FIN") (vii)(xiv)
- Mex Gas Internacional, S. L. ("MGAS") (vii)(viii)
- Pemex Desarrollo e Inversión Inmobiliaria, S. A. de C. V. ("PDII") (vii)(viii)
- Kot Insurance Company, AG. ("KOT") (vii)(xiii)
- PPQ Cadena Productiva, S.L. ("PPQCP") (vii)(viii)
- I.I.I. Servicios, S. A. de C. V. ("III Servicios") (vii)(viii)
- PMI Ducto de Juárez, S. de R.L. de C.V. ("PMI DJ") (i)(vii)(viii)
- PMX Fertilizantes Holding, S.A de C.V. ("PMX FH") (vii)(viii)
- PMX Fertilizantes Pacífico, S.A. de C.V. ("PMX FP") (vii)(viii)
- Grupo Fertinal, S.A. de C.V. ("GP FER") (vii)(viii)
- Compañía Mexicana de Exploraciones, S.A. de C.V. ("COMESA") (ii)(viii)
- P.M.I. Trading México, S.A. de C.V. ("TRDMX") (i)(vii)(viii)
- Holdings Holanda Services, B.V. ("HHS") (vii)(xii)

i. Member Company of the "PMI Subsidiaries."

ii. Non-controlling interest company (98.33% in PMI CIM and 60.0% in COMESA and HJ BARRERAS until April 30, 2020).

iii. These companies were merged into PMI NASA in 2020.

iv. As of May 2020, this company is not included in the consolidation.

v. This company was liquidated in August 2020.

vi. This company was liquidated in April 2020.

vii. Petróleos Mexicanos owns 100.0% of the interests in this Subsidiary Company.

viii. Operates in Mexico.

ix. Operates in Spain.

x. Operates in United States of America.

xi. Operates in Ireland.

xii. Operates in Netherlands.

xiii. Operates in Switzerland.

xiv. Operates in Cayman Islands.

xv. This company was liquidated in December 2021.

NOTE 6. SEGMENT FINANCIAL INFORMATION

PEMEX's primary business is the exploration and production of crude oil and natural gas, as well as the production, processing, marketing and distribution of petroleum and petrochemical products. As of December 31, 2021, PEMEX's operations were conducted through five business segments: Exploration and Production, Industrial Transformation, Logistics, the Trading Companies and Corporate and other operating Subsidiary Companies. Until December 31, 2020, PEMEX's operations were also conducted through the additional business segment, Fertilizers (merged into the Industrial Transformation segment as of January 1, 2021). Until June 30, 2019, PEMEX's operations were also conducted through the additional two business segments: Drilling and Services (merged into Pemex Exploration and Production as of July 1, 2019) and Ethylene (merged into Pemex Industrial Transformation as of July 1, 2019). Due to PEMEX's structure, there are significant amounts of inter-segment sales among the reporting segments, which are made at market prices.

The primary sources of revenue for PEMEX's business segments are as described below:

- The exploration and production segment earns revenues from domestic sales of crude oil and natural gas, and from exporting crude oil through certain of the Trading Companies. Crude oil export sales are made through the agent subsidiary company PMI CIM, to 18 major customers in various foreign markets. Approximately half of PEMEX's crude oil is sold to Pemex Industrial Transformation. Additionally, it receives income from drilling services, and servicing and repairing wells.
- The industrial transformation segment earns revenues from sales of refined petroleum products and derivatives, mainly to third parties within the domestic market. This segment also sells a significant portion of the fuel oil it produces to the *Comisión Federal de Electricidad* (Federal Eletricity Commission, or "CFE") and a significant portion of jet fuel produced to the *Aeropuertos y Servicios Auxiliares* (Airports and Auxiliary Services Agency). The refining segment's most important products are different types of gasoline and diesel.
- The industrial transformation segment also earns revenues from domestic sources generated by sales of natural gas, liquefied petroleum gas, naphtha, butane and ethane and certain other petrochemicals such as methane derivatives, ethane derivatives, aromatics, ammonia, fertilizers and and its derivatives.
- The logistics segment earns income from transportation and storage of crude oil, petroleum products and petrochemicals, as well as related services, which it provides by employing pipelines and offshore and onshore resources, and from providing services related to the maintenance, handling, guarding and management of these products.
- The trading companies segment, which consist of PMI CIM, PMI NASA, PMI Trading and MGAS (the "Trading Companies"), earns revenues from trading crude oil, natural gas and petroleum and petrochemical products in international markets.
- The segment related to corporate and the Subsidiary Companies provides administrative, financing, consulting and logistical services, as well as economic, tax and legal advice and re-insurance services to PEMEX's subsidiary entities and companies.

The following tables present the condensed financial information of these segments, after elimination of unrealized intersegment gain (loss), and include only select line items. The columns before intersegment eliminations include unconsolidated figures. As a result, the line items presented below may not total. These reporting segments are those which PEMEX's management evaluates in its analysis of PEMEX and on which it bases its decision-making. These reporting segments are presented in PEMEX's reporting currency.

As of/for the year ended December 31, 2021	Exploration and Production	Industrial Transformation	Logistics	Trading Companies	Corporate and Other Operating Subsidiary Companies	Intersegment eliminations	Total
Sales:							
Trade	Ps. 468,417,239	704,624,236	—	304,536,717	13,077,187	—	Ps.1,490,655,379
Intersegment	460,572,660	186,494,071	84,952,786	400,866,433	113,095,618	(1,245,981,568)	—
Services income	177,607	510,999	2,949,047	1,314,183	21,405	—	4,973,241
(Impairment) of wells, pipelines, properties, plant and equipment, net	34,562,831	(32,153,192)	(3,161,108)	(459,126)	—	—	(1,210,595)
Cost of sales	461,811,648	984,150,631	56,139,574	690,088,452	39,176,647	(1,164,716,250)	1,066,650,702
Gross income (loss)	501,918,689	(124,674,517)	28,601,151	16,169,755	87,017,563	(81,265,318)	427,767,323
Distribution, transportation and sales expenses.	308,466	16,967,684	121,109	1,349,800	112,455	(3,820,964)	15,038,550
Administrative expenses	68,609,035	55,094,836	18,926,235	2,102,321	83,113,475	(77,413,591)	150,432,311
Other revenue	8,374,912	4,547,927	238,613	649,315	3,789,699	—	17,600,466
Other expenses	(48,624,108)	(1,518,540)	(363,276)	(42,633)	(401,048)	(19,491)	(50,969,096)
Operating income (loss)	392,751,992	(193,707,650)	9,429,144	13,324,316	7,180,284	(50,254)	228,927,832
Financing income	74,733,941	294,144	6,285,126	389,888	168,900,864	(221,697,179)	28,906,784
Financing cost	(143,814,194)	(18,879,599)	(308,502)	(2,050,801)	(221,265,982)	221,747,431	(164,571,647)
Derivative financial instruments (cost) income, net	(21,076,343)	(20,346)	—	(1,624,762)	(2,502,792)	—	(25,224,243)
Foreign exchange (loss), net	(33,902,009)	(5,627,711)	99	(21,490)	(6,123,939)	—	(45,675,050)
(Loss) profit sharing in joint ventures and associates	(452,617)	(1,900,487)	(118)	(423,658)	(257,098,396)	256,787,169	(3,088,107)
(Impairment) of joint ventures				(6,703,324)			(6,703,324)
Taxes, duties and other	308,139,256	—	(68,168)	2,061,302	(2,784,268)	—	307,348,122
Net (loss) income	Ps. (39,898,486)	(219,841,649)	15,473,917	828,867	(308,125,693)	256,787,167	(294,775,877)
Total current assets	875,933,631	252,372,772	219,321,008	244,042,561	2,042,047,365	(3,175,323,293)	458,394,044
Total non-current assets	837,915,816	418,907,482	154,076,115	40,872,714	669,001,750	(527,069,750)	1,593,704,127
Total current liabilities	495,444,322	776,564,748	62,569,320	189,834,560	2,573,115,150	(3,174,879,770)	922,648,330
Total non-current liabilities	2,203,155,765	657,020,316	77,857,852	792,646	2,078,118,229	(1,717,494,184)	3,299,450,624
Equity (deficit), net	(984,750,640)	(762,304,810)	232,969,951	94,288,069	(1,940,184,264)	1,189,980,911	(2,170,000,783)
Depreciation and amortization	108,323,352	16,271,506	5,867,292	266,764	2,702,451	—	133,431,365
Depreciation of rights of use	386,412	4,235,223	268,824	884,797	632,615	—	6,407,871
Net periodic cost of employee benefits excluding items recognized in other comprehensive income	38,215,687	54,997,753	11,661,937	48,093	35,291,934	—	140,215,404
Interest income [1]	175,149	245,596	46,414	105,464	14,143,780	—	14,716,403
Interest cost [2]	2,643,655	4,924,651	267,546	1,839,455	142,037,761	—	151,713,068

[1] Included in financing income.
[2] Included in financing cost.

As of/for the year ended December 31, 2020	Exploration and Production	Industrial Transformation [1]	Logistics	Trading Companies	Corporate and Other Operating Subsidiary Companies	Intersegment eliminations	Total
Sales:							
Trade	301,393,451	479,244,968	—	159,786,736	8,521,205	—	948,946,360
Intersegment	242,454,754	97,728,702	80,575,471	280,924,383	98,451,594	(800,134,904)	—
Services income	133,315	191,667	4,099,000	229,140	62,362	—	4,715,484
(Impairment) reversal of wells, pipelines, properties, plant and equipment, net	35,031,541	(71,854,015)	426,560	42,214	—	—	(36,353,700)
Cost of sales	391,513,815	658,688,191	43,614,768	430,672,407	27,536,221	(719,410,712)	832,614,690
Gross income (loss)	187,499,246	(153,376,869)	41,486,263	10,310,066	79,498,940	(80,724,192)	84,693,454
Distribution, transportation and sales expenses	251,625	14,823,740	107,691	1,277,980	209,676	(4,234,470)	12,436,242
Administrative expenses	72,457,241	52,116,760	15,762,946	2,106,780	79,922,661	(76,471,944)	145,894,444
Other revenue	2,162,510	4,106,298	513,076	874,412	4,112,550	—	11,768,846
Other expenses	(896,526)	(124,722)	(7,445)	(86,960)	(113,590)	34,529	(1,194,714)
Operating (loss) income	116,056,364	(216,335,793)	26,121,257	7,712,758	3,365,563	16,751	(63,063,100)
Financing income	77,700,999	469,222	3,340,622	307,229	162,801,375	(227,877,399)	16,742,048
Financing cost	(164,419,519)	(12,166,577)	(450,802)	(812,552)	(211,776,436)	227,860,644	(161,765,242)
Derivative financial instruments (cost) income, net	24,939,748	22,862	—	(1,794,243)	(6,072,226)	—	17,096,141
Foreign exchange (loss), net	(116,528,387)	(9,060,800)	(442,139)	(750,041)	(2,167,937)	—	(128,949,304)
(Loss) profit sharing in joint ventures and associates	(61,956)	(1,016,062)	3,813	(1,931,323)	(441,711,566)	441,176,561	(3,540,533)
Taxes, duties and other	154,609,136	—	4,842,171	3,413,999	22,706,769	—	185,572,075
Net (loss) income	(216,921,887)	(238,087,148)	23,730,580	(682,171)	(518,267,996)	441,176,557	(509,052,065)
Total current assets	937,017,021	155,514,025	166,202,857	168,261,357	906,149,787	(2,003,285,308)	329,859,739
Total non-current assets	884,741,960	331,853,787	167,498,268	40,084,813	750,322,623	(575,873,262)	1,598,628,189
Total current liabilities	464,163,895	405,696,477	39,568,364	129,161,357	1,734,633,918	(2,000,813,940)	772,410,071
Total non-current liabilities	2,363,252,154	714,743,134	90,624,955	1,121,488	2,218,921,311	(1,827,858,155)	3,560,804,887
Equity (deficit), net	(1,005,657,068)	(633,071,799)	203,507,806	78,063,325	(2,297,082,819)	1,249,513,525	(2,404,727,030)
Depreciation and amortization	101,126,295	19,744,860	5,917,668	317,241	2,525,756	—	129,631,820
Depreciation of rights of use	313,008	4,715,238	460,957	992,148	747,880	—	7,229,231
Net periodic cost of employee benefits excluding items recognized in other comprehensive income	35,356,366	51,845,677	8,927,651	(1,156)	32,680,002	—	128,808,540
Interest income [2]	61,001	469,019	38,972	80,245	12,790,987	—	13,440,224
Interest cost [3]	3,343,074	5,340,096	364,871	195,249	133,874,666	—	143,117,956

[1] On January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation. For comparison purposes, all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment.

[2] Included in financing income.

[3] Included in financing cost.

As of/for the year ended December 31, 2019	Exploration and Production [1]	Industrial Transformation [2][3]	Logistics	Trading Companies	Corporate and Other Operating Subsidiary Companies	Intersegment eliminations	Total
Sales:							
Trade	409,059,838	798,801,415	—	175,509,189	9,492,063	—	1,392,862,505
Intersegment	333,735,644	128,448,623	88,604,529	484,139,042	100,021,336	(1,134,949,174)	—
Services income	473,324	2,089,624	4,663,770	67,982	1,813,980	—	9,108,680
(Impairment) reversal of wells, pipelines, properties, plant and equipment, net	(104,035,887)	39,945,167	34,119,240	(1,311,674)	—	—	(31,283,154)
Cost of sales	472,489,346	973,903,012	51,298,858	646,671,417	49,979,372	(1,071,408,581)	1,122,933,424
Gross income (loss)	166,743,573	(4,618,183)	76,088,681	11,733,122	61,348,007	(63,540,593)	247,754,607
Distribution, transportation and sales expenses	262,642	24,296,199	22,467	1,323,007	31,323	(4,049,727)	21,885,911
Administrative expenses	59,171,975	51,268,171	8,504,381	2,575,536	68,791,707	(59,542,948)	130,768,822
Other revenue	6,796,590	3,132,801	202,800	444,289	4,363,967	—	14,940,447
Other expenses	(6,134,114)	(559,073)	(311,878)	—	(130,791)	(75,835)	(7,211,691)
Operating income (loss)	107,971,432	(77,608,825)	67,452,755	8,278,868	(3,241,847)	(23,753)	102,828,630
Financing income	87,737,456	2,003,212	697,130	801,046	156,297,750	(218,300,991)	29,235,603
Financing cost	(134,241,910)	(7,117,349)	(434,392)	(971,573)	(208,419,002)	218,322,886	(132,861,340)
Derivative financial instruments (cost) income, net	(7,014,529)	(9,231)	—	(1,471,566)	(14,768,593)	(4)	(23,263,923)
Foreign exchange (loss) income, net	78,315,007	3,722,707	214,157	(212,619)	4,891,136	—	86,930,388
(Loss) profit sharing in joint ventures and associates	28,770	(2,209,140)	(17,682)	1,195,058	(295,764,002)	295,609,103	(1,157,893)
Taxes, duties and other	373,640,107	(1,446,202)	(19,902,667)	2,433,349	(10,901,098)	—	343,823,489
Net (loss) income	(240,843,881)	(79,772,424)	87,814,635	5,185,865	(350,103,460)	295,607,241	(282,112,024)
Depreciation and amortization	103,328,661	24,936,844	6,521,380	93,193	2,306,932	—	137,187,010
Depreciation of rights of use	352,286	4,893,942	228,929	1,288,306	665,812	—	7,429,275
Net periodic cost of employee benefits excluding items recognized in other comprehensive income	34,534,805	54,341,468	243,330	37,512	27,019,834	—	116,176,949
Interest income [4]	127,315	450,359	146,123	212,023	23,547,886	—	24,483,706
Interest cost [5]	2,983,810	5,268,452	232,337	172,120	117,100,648	—	125,757,367

[1] On July 1, 2019, Pemex Drilling and Services was merged into Pemex Exploration and Production. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Exploration and Production segment.

[2] On July 1, 2019, Pemex Ethylene was merged into Pemex Industrial Transformation. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment.

[3] On January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment.

[4] Included in financing income.

[5] Included in financing cost.

Supplemental geographic information –

	For the years ended December 31,		
	2021	2020	2019
Domestic sales	Ps. 762,114,551	Ps. 503,712,031	Ps. 807,020,214
Export sales:			
United States	503,358,963	304,344,028	372,134,617
Canada, Central and South America	2,888,992	2,105,703	3,102,066
Europe	69,011,487	45,254,008	131,498,445
Other	153,281,386	93,530,590	79,107,163
Total export sales	728,540,828	445,234,329	585,842,291
Services income*	4,973,241	4,715,484	9,108,680
Total sales	**Ps. 1,495,628,620**	**Ps. 953,661,844**	**Ps. 1,401,971,185**

* Services income as of December 31, 2021, 2020 and 2019 represent approximately 99%, 97% and 80%, from domestic sales, respectively.

As of December 31, 2021 and 2020 PEMEX does not have significant long-lived assets outside of Mexico.

Income by product –

	For the years ended December 31,					
	2021		2020		2019	
Domestic sales						
Refined petroleum products and derivatives (primarily gasolines)	Ps.	622,091,842	Ps.	409,240,569	Ps.	725,759,040
Gas		113,103,547		79,176,837		66,303,063
Petrochemical products		26,919,162		15,294,625		14,958,111
Total domestic sales	Ps.	762,114,551	Ps.	503,712,031	Ps.	807,020,214
Export sales						
Crude oil	Ps.	468,219,964	Ps.	301,199,114	Ps.	408,771,392
Refined petroleum products and derivatives (primarily gasolines)		172,389,717		107,391,773		118,495,443
Gas		76,144,006		32,192,334		53,353,075
Petrochemical products		11,787,141		4,451,108		5,222,381
Total export sales	**Ps.**	**728,540,828**	**Ps.**	**445,234,329**	**Ps.**	**585,842,291**

NOTE 7. REVENUE

As of December 31, 2021, 2020 and 2019, the revenues were as follows:

A. Revenue disaggregation

For the year ended December 31,	Exploration and Production[1]	Industrial Transformation[2][3]	Logistics	Trading Companies	Corporate and Other Operating Subsidiary Companies	Total
Geographical market						
2021						
United States	Ps. 258,726,545	—	—	240,012,752	4,619,666	503,358,963
Other	141,904,248	—	—	13,141,852	1,124,425	156,170,525
Europe	67,589,171	—	—	1,422,317	—	69,011,488
Local	374,882	705,135,235	2,949,047	51,273,979	7,354,501	767,087,644
Total	**Ps. 468,594,846**	**705,135,235**	**2,949,047**	**305,850,900**	**13,098,592**	**1,495,628,620**
2020						
United States	Ps. 171,640,991	—	—	131,653,920	1,049,117	304,344,028
Other	85,271,096	—	—	8,259,494	2,124,601	95,655,191
Europe	44,287,027	—	—	966,982	—	45,254,009
Local	327,652	479,436,635	4,099,000	19,135,480	5,409,849	508,408,616
Total	**Ps. 301,526,766**	**479,436,635**	**4,099,000**	**160,015,876**	**8,583,567**	**953,661,844**
2019						
United States	Ps. 226,689,583	—	—	144,578,641	866,393	372,134,617
Other	57,106,954	—	—	21,001,222	4,101,054	82,209,230
Europe	124,974,855	—	—	6,409,388	1,903,942	133,288,185
Local	761,770	800,891,039	4,663,770	3,587,920	4,434,654	814,339,153
Total	**Ps. 409,533,162**	**800,891,039**	**4,663,770**	**175,577,171**	**11,306,043**	**1,401,971,185**

For the year ended December 31,		Exploration and Production[1]	Industrial Transformation[2][3]	Logistics	Trading Companies	Corporate and Other Operating Subsidiary Companies	Total
Major products and services							
2021							
Crude oil	Ps.	468,219,964	—	—	—	—	468,219,964
Gas		197,275	112,906,272	—	76,144,006	—	189,247,553
Refined petroleum products		—	572,490,831	—	221,990,729	—	794,481,560
Other		—	19,227,133	—	6,401,982	13,077,187	38,706,302
Services		177,607	510,999	2,949,047	1,314,183	21,405	4,973,241
Total	**Ps.**	**468,594,846**	**705,135,235**	**2,949,047**	**305,850,900**	**13,098,592**	**1,495,628,620**
2020							
Crude oil	Ps.	301,199,114	—	—	—	—	301,199,114
Gas		194,337	60,076,159	—	51,098,675	—	111,369,171
Refined petroleum products		—	409,240,569	—	107,391,773	—	516,632,342
Other		—	9,928,240	—	1,296,288	8,521,205	19,745,733
Services		133,315	191,667	4,099,000	229,140	62,362	4,715,484
Total	**Ps.**	**301,526,766**	**479,436,635**	**4,099,000**	**160,015,876**	**8,583,567**	**953,661,844**
2019							
Crude oil	Ps.	408,771,392	—	—	—	—	408,771,392
Gas		288,446	66,014,617	—	53,353,075	—	119,656,138
Refined petroleum products		—	722,239,101	—	121,028,417	986,965	844,254,483
Other		—	10,547,697	—	1,127,697	8,505,098	20,180,492
Services		473,324	2,089,624	4,663,770	67,982	1,813,980	9,108,680
Total	**Ps.**	**409,533,162**	**800,891,039**	**4,663,770**	**175,577,171**	**11,306,043**	**1,401,971,185**
Timing of revenue recognition							
2021							
Products transferred at a point in time	Ps.	468,417,239	651,854,339	2,949,047	304,536,717	13,077,187	1,440,834,529
Products and services transferred over the time		177,607	53,280,896	—	1,314,183	21,405	54,794,091
Total	**Ps.**	**468,594,846**	**705,135,235**	**2,949,047**	**305,850,900**	**13,098,592**	**1,495,628,620**
2020							
Products transferred at a point in time	Ps.	301,526,766	479,244,968	4,099,000	159,786,736	8,521,205	953,178,675
Products and services transferred over the time		—	191,667	—	229,140	62,362	483,169
Total	**Ps.**	**301,526,766**	**479,436,635**	**4,099,000**	**160,015,876**	**8,583,567**	**953,661,844**
2019							
Products transferred at a point in time	Ps.	409,059,838	798,801,415	4,663,770	175,509,189	9,492,063	1,397,526,275
Products and services transferred over the time		473,324	2,089,624	—	67,982	1,813,980	4,444,910
Total	**Ps.**	**409,533,162**	**800,891,039**	**4,663,770**	**175,577,171**	**11,306,043**	**1,401,971,185**

(1) On July 1, 2019, Pemex Drilling and Services was merged into Pemex Exploration and Production. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Exploration and Production segment.

(2) On July 1, 2019, Pemex Ethylene was merged into Pemex Industrial Transformation. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment.

(3) On January 1, 2021, Pemex Fertilizers was merged into Pemex Industrial Transformation. For comparison purposes all operations for periods prior to the merger are presented in the Pemex Industrial Transformation segment.

Nature, performance obligations and timing of revenue recognition-

Revenue is measured based on the consideration specified in a contract with a customer. PEMEX recognizes revenue when it transfers control over a good or service to a customer.

The following table provides information about the nature and timing of the satisfaction of performance obligations in contracts with customers, including significant payment terms and the related revenue.

Products / services	Nature, performance obligations	Timing of revenue recognition
Crude oil sales	Export sales of crude oil are based on delivery terms established in contracts or orders. All sales are performed by the Free on Board International commercial term ("FOB" Incoterm). Crude oil sale contracts consider possible customers' claims due to product quality, volume or delays in boarding, which are estimated in the price of the transaction. For orders that have variations in price, revenue is adjusted on the closing date of each period. The subsequent variations in the fair value at the different reporting dates are recognized according to IFRS 9. The price of the product is determined based on a market components formula and the sale of crude oil.	Revenue is recognized at a point in time when control of the crude oil has transferred to the customer, which occurs when the product is delivered at the point of shipping. Invoices are generated at that time and are mostly payable within the deadlines established in contracts or orders. Payments in respect of crude oil sold and delivered shall be made within 30 days after the date of the bill of lading therefor. For international market crude oil sales, revenue is recognized with a provisional price, which undergoes subsequent adjustments until the product has arrived at the port of destination. There may be a period of up to 2 months in determining the final sale price, such as in the case of sales to some regions. Revenue is measured initially estimating variables such as quality and volume claims, delays in boarding, etc.
Sale of petroleum products	For all petroleum products, there is only one performance obligation that includes transport and handling services to the point of delivery. The price is determined based on the price at the point of delivery, adding the price of the services rendered (freight, handling of jet fuel, etc.) with the provisions and terms established by the *Comisión Reguladora de Energía* (Energy Regulatory Commission or "CRE"). There are penalties for delivery failures and/or payment obligations, as well as quality and volume claims, which are known days after the transaction.	Revenue is recognized at a point in time when control is transferred to the customer, which occurs either at the point of shipping or when it is delivered at the customer's facilities. Therefore, transportation fees can be included in the price of sale of the product and are considered part of a single performance obligation since transportation is rendered before control is transferred. Revenue is initially measured by estimating variables such as quality and volume claims, etc. Invoices are usually payable within 30 days.
Sales of natural gas	There is only one performance obligation that includes transport and handling services to the point of delivery. The transaction price is established at the time of sale, including the estimation of variable considerations such as capacity, penalties, adjustments for quality or volume claims, and	Revenue is recognized at a point in time when control is transferred to the customer, which occurs when it is delivered at the customer's facilities. Therefore, transportation fees can be included in the price of sale of the product and are considered part of a single performance obligation since transportation is rendered before control is transferred.

Products / services	Nature, performance obligations	Timing of revenue recognition
	incentives for the purchase of products; which are known days after the transaction. Such variable consideration is recognized to the extent that it is probable that it will not be reversed in a future period.	Revenue initially is measured estimating variables as quality and volume claims, etc. Invoices are usually payable within 30 days.
Services	In cases where within the same service order there are transportation and storage services, there could exist more than one performance obligation, depending on the term of the service. Price is not distributed when there is a performance obligation, except, when there is more than one performance obligation, in which case, the price of the transaction will be assigned according to the service price established in the service order. When there is a performance obligation, the price is not distributed, but if it is considered that there is more than one performance obligation, the price of the transaction is considered based on the prices established in the service orders and which also include penalties such as quality and volume claims.	Income is recognized over time as the service is rendered. Invoices are usually payable within 22 days.
Other products	There is only one performance obligation that includes transportation for delivery to destination. The sale and delivery of the product are made at the same time and because they are FOB, transportation fees are included in the price of sale of the product. The transaction price is established at the time of sale, including the estimation of variable considerations such as capacity, penalties, extraordinary sales not included in contracts, adjustments for quality or volume claims, and incentives for the purchase of products; which are known days after the transaction.	The price of the product is estimated on the date of sale and considers variables such as quality and volume claims, etc. Invoices are usually payable within 30 days.

B. Accounts receivable in the statement of financial position

As of December 31, 2021 and 2020, PEMEX had accounts receivable derived from customer contracts in the amounts of Ps. 101,259,081 and Ps. 68,382,413, respectively (see Note 10). As of December 31, 2021 and 2020, advance of customers was Ps. 7,495,198 and Ps. 8,548,260, respectively. The amount of Ps. 7,623,880 and Ps. 6,627,033 included in advance from customers as of December 31, 2020 and 2019, were recognized as revenue in 2021 and 2020, respectively.

C. Practical expedients

i. Significant financial component, less than one year

PEMEX does not need to adjust the amount committed in consideration for goods and services to account for the effects of a significant financing component, since the transfer and the time of payment of a good or service committed to the customer is less than one year.

ii. Practical expedient

PEMEX applied the practical expedient, so disclosure about remaining performance obligations that conclude in less than one year is not needed.

When PEMEX is entitled to consideration for an amount that directly corresponds to the value of the performance that PEMEX has completed, it may recognize an income from ordinary activities for the amount to which it has the right to invoice.

D. COVID-19 pandemic impacts

Decline in international crude oil prices and other impacts of the COVID-19 pandemic

On March 6, 2020, the Organization of the Petroleum Exporting Countries ("OPEC"), led by Saudi Arabia, Russia and other groups of petroleum producers, did not come to an agreement to reduce crude oil production in order to support crude oil prices, which resulted in a significant drop in global crude oil prices.

On March 11, 2020, the World Health Organization declared the COVID-19 outbreak a pandemic. The COVID-19 pandemic has resulted in numerous deaths and governments across the world have instituted measures to address the pandemic, including mandatory quarantines, social distancing guidelines, travel restrictions and declaration of health emergencies. The effects of the COVID-19 pandemic have led to a worldwide economic slowdown, and as a result a decrease in global demand for crude oil and derivatives.

In order to address the drop in crude oil prices that began in March 2020, on April 12, 2020, OPEC and other non-OPEC oil exporting countries, including, among others, Mexico and Russia, reached an agreement to reduce world crude oil supply. Pursuant to this agreement, these countries, which are known as OPEC+, agreed to reduce their overall crude oil production by 9.7 million barrels per day from May 1, 2020 through June 30, 2020, by 7.7 million barrels per day from July 1, 2020 through December 31, 2020 and by 5.8 million barrels per day from January 1, 2021 through April 30, 2022. In particular, Mexico agreed to reduce its crude oil production by 100,000 barrels per day for a period of two months beginning on May 1, 2020. During May, June, July, August, September, October and November 2020, PEMEX decreased its crude oil production to 1,676.6, 1,654.7, 1,647.3, 1,687.9, 1,697.8, 1,680.2 and 1,688.8 thousand barrels per day, respectively.

On April 20, 2020, Mexican crude oil experienced an unprecedented drop below U.S. $0.00 to negative U.S. $2.37 per barrel. This drastic drop in price was due to low oil demand as a result of COVID-19 and the lack of oil storage. As of December 31, 2020, the weighted average Mexican crude oil price was U.S. $47.16 per barrel, a decrease of U.S. $10.52 per barrel as compared to the 2019 weighted average Mexican crude oil export price. Any future decline in international crude oil and natural gas prices will have a similar negative impact on PEMEX's results of operations and financial condition.

PEMEX has been affected by these developments and in order to address these adverse effects on its budget results to comply with its budget financial goal established in the approved budget, PEMEX is taking actions to offset the expected decrease in revenue for the year.

PEMEX prepared its budget for 2020 based on a Mexican crude oil basket price of U.S. $49.00 per barrel and contracted financial derivative instruments to hedge PEMEX's risk exposure to declines in the price of Mexican crude oil price, when it falls below the average price of U.S. $49.00 per barrel, up to a floor of U.S. $44.00 per barrel.

PEMEX's budget for 2022 was prepared based on a Mexican crude oil basket price of U.S. $55.1 per barrel and PEMEX entered into derivative financial instruments to hedge PEMEX's risk exposure to drops in prices below the level at which the expected financial balance of PEMEX is approximately zero (U.S. $63 per barrel). These derivative financial instruments are intended to hedge a proportion of PEMEX's exposure of up to five U.S. dollars below the budgeted price.

Despite the presence of COVID-19 in Mexico, PEMEX has continued to develop its hydrocarbon exploration, production and trading activities. In some cases, PEMEX has allowed its personnel to work remotely. The greatest economic impact for PEMEX has been the decline in its domestic sales of petroleum products due to the stoppage of economic activities and the confinement of the population in their homes.

As a result of the COVID-19 pandemic, the Mexican Government, through the *Secretaría de Salud* (Mexican Ministry of Health), has implemented actions to protect against COVID-19. Some of these actions consist of, among others, directives to avoid places of work, crowded public areas, public buildings or unnecessary social activities during this time. These preventative measures caused a decrease in demand of certain goods and services, including petroleum products.

Primarily as a result of the worldwide economic slowdown and, in particular, the decrease in fuel demand, PEMEX had a 32% decrease in its domestic sales of petroleum products as of December 31, 2020 as compared to 2019.

During 2021 and as of the date of these Consolidated Financial Statements, all of PEMEX's operations have continued without interruptions related to COVID-19. In accordance with the business continuity plan, PEMEX has limited its workforce's access to the facilities, for which PEMEX implemented alternating shifts and allowed a portion of the workforce to continue to work remotely. In addition, PEMEX has implemented sanitizing and disinfecting measures to its facilities and the use of instruments and other equipment to monitor infection risks.

In addition to the operational impacts of the COVID-19 pandemic, international prices for oil, oil products and natural gas are volatile and strongly influenced by conditions and expectations of world supply and demand. The COVID-19 pandemic led to significantly decreased oil prices, particularly in 2020, and consequently, significantly adversely affected our business, results of operations and financial condition. During 2021, those prices have recovered, largely due to geopolitical events unrelated to COVID-19, reducing possible adverse effects on PEMEX's results of operation and financial situation.

The extent to which COVID-19 or other health pandemics or epidemics may continue to impact Mexico, the Mexican economy and the global economy and, in turn, PEMEX's business, results of operations and financial condition is highly uncertain and will depend on numerous evolving factors that cannot be predicted.

During 2021, the price of the Mexican crude oil export mix increased by U.S. $24.13 or 85.6%, from U.S. $35.47 per barrel in 2020 to U.S. $65.85 per barrel in 2021, which was reflected in the increase in the value of PEMEX's revenues.

Domestic sales increased by 51.3% or Ps. 258,402,520 in 2021, from Ps. 503,712,031 in 2020 to Ps. 762,114,551 in 2021, mainly due to increases in the sales prices of gasoline, diesel, fuel oil, jet fuel, natural gas and natural gas liquids.

NOTE 8. FINANCIAL INSTRUMENTS

A. Accounting classifications and fair values of financial instruments-

The following tables present information about PEMEX's carrying amounts and fair values of financial assets and financial liabilities, including their levels in the fair value hierarchy, as of December 31, 2021, and 2020. It does not include fair value information for financial assets and financial liabilities not measured at fair value if the carrying amount is a reasonable approximation of fair value.

Additionally, as of December 31, 2021, and 2020, the disclosure of the fair value for the lease obligations is not required.

	Carrying amount						Fair value hierarchy			
As of December 31, 2021	FVTPL	FVOCI – debt instruments	FVOCI – equity instruments	Financial assets at amortized cost	Other financial liabilities	Total carrying amount	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value										
Derivative financial instruments	12,473,967	—	—	—	—	12,473,967	—	12,473,967	—	12,473,967
Equity instruments(i)	—	—	448,949	—	—	448,949	—	448,949	—	448,949
Total	12,473,967	—	448,949	—	—	12,922,916				
Financial assets not measured at fair value										
Cash and cash equivalents	—	—	—	76,506,447	—	76,506,447	—	—	—	—
Customers	—	—	—	101,259,081	—	101,259,081	—	—	—	—
Officials and employees	—	—	—	3,752,693	—	3,752,693	—	—	—	—
Sundry debtors	—	—	—	37,034,460	—	37,034,460	—	—	—	—
Investments in joint ventures and associates	—	—	—	2,254,952	—	2,254,952	—	—	—	—
Notes receivable	—	—	—	1,646,290	—	1,646,290	—	—	—	—
Mexican Government Bonds	—	—	—	110,855,356	—	110,855,356	109,124,514	—	—	109,124,514
Other assets	—	—	—	4,537,481	—	4,537,481	—	—	—	—
Total	—	—	—	337,846,759	—	337,846,759				
Financial liabilities measured at fair value										
Derivative financial instruments	(13,636,086)	—	—	—	—	(13,636,086)	—	(13,636,086)	—	(13,636,086)
Total	(13,636,086)	—	—	—	—	(13,636,086)				
Financial liabilities not measured at fair value										
Suppliers	—	—	—	—	(264,056,358)	(264,056,358)	—	—	—	—
Accounts and accrued expenses payable	—	—	—	—	(32,015,808)	(32,015,808)	—	—	—	—
Leases	—	—	—	—	(59,351,648)	(59,351,648)	—	—	—	—
Debt	—	—	—	—	(2,249,695,894)	(2,249,695,894)	—	(2,211,701,630)	—	(2,211,701,630)
Total	—	—	—	—	(2,605,119,708)	(2,605,119,708)				

(i) Refers to the participation in TAG Pipelines Sur, S. de R.L. de C.V.

	Carrying amount						Fair value hierarchy			
As of December 31, 2020	FVTPL	FVOCI – debt instruments	FVOCI – equity instruments	Financial assets at amortized cost	Other financial liabilities	Total carrying amount	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value										
Derivative financial instruments	25,947,993	—	—	—	—	25,947,993	—	25,947,993	—	25,947,993
Equity instruments(i)	—	—	384,665	—	—	384,665	—	384,665	—	384,665
Total	25,947,993	—	384,665	—	—	26,332,658				
Financial assets not measured at fair value										
Cash and cash equivalents	—	—	—	39,989,781	—	39,989,781	—	—	—	—
Customers	—	—	—	68,382,413	—	68,382,413	—	—	—	—
Officials and employees	—	—	—	3,539,505	—	3,539,505	—	—	—	—
Sundry debtors	—	—	—	28,076,118	—	28,076,118	—	—	—	—
Investments in joint ventures and associates	—	—	—	12,015,129	—	12,015,129	—	—	—	—
Notes receivable	—	—	—	886,827	—	886,827	—	—	—	—
Mexican Government Bonds	—	—	—	129,549,519	—	129,549,519	129,320,536	—	—	129,320,536
Other assets	—	—	—	3,824,913	—	3,824,913	—	—	—	—
Total	—	—	—	286,264,205	—	286,264,205				
Financial liabilities measured at fair value										
Derivative financial instruments	(9,318,015)	—	—	—	—	(9,318,015)	—	(9,318,015)	—	(9,318,015)
Total	(9,318,015)	—	—	—	—	(9,318,015)				
Financial liabilities not measured at fair value										
Suppliers	—	—	—	—	(281,978,041)	(281,978,041)	—	—	—	—
Accounts and accrued expenses payable	—	—	—	—	(30,709,497)	(30,709,497)	—	—	—	—
Leases	—	—	—	—	(63,184,128)	(63,184,128)	—	—	—	—
Debt	—	—	—	—	(2,258,727,317)	(2,258,727,317)	—	(2,232,694,117)	—	(2,232,694,117)
Total	—	—	—	—	(2,634,598,983)	(2,634,598,983)				

(i) Refers to the participation in TAG Pipelines Sur, S. de R.L. de C.V.

As of December 31, 2021 and 2020, PEMEX has monetary assets and liabilities denominated in foreign currency as indicated below:

	As of December 31, 2021				
	Foreign currency				
	Assets	Liabilities	Net position Asset/(Liability)	Exchange rate	Equivalent to Mexican peso
U.S. dollar	14,268,352	97,614,622	(83,346,270)	20.5835	Ps. (1,715,557,949)
Euro	741,098	11,735,899	(10,994,801)	23.4086	(257,372,899)
Pounds sterling	2,085	469,032	(466,947)	27.8834	(13,020,070)
Japanese yen	—	110,178,061	(110,178,061)	0.1789	(19,710,855)
Swiss francs	—	365,348	(365,348)	22.5924	(8,254,088)
Total					**Ps. (2,013,915,861)**

	As of December 31, 2020				
	Foreign currency				
	Assets	Liabilities	Net position Asset/(Liability)	Exchange rate	Equivalent to Mexican peso
U.S. dollar	7,293,404	87,866,609	(80,573,205)	19.9487	Ps. (1,607,330,695)
Euro	2,564	13,501,943	(13,499,379)	24.4052	(329,455,044)
Pounds sterling	30	819,590	(819,560)	27.2579	(22,339,485)
Japanese yen	—	110,165,166	(110,165,166)	0.1933	(21,294,927)
Swiss francs	—	515,348	(515,348)	22.5720	(11,632,435)
Total					**Ps. (1,992,052,586)**

Debt is valued and registered at amortized cost and the fair value of debt is estimated using quotes from major market sources which are then adjusted internally using standard market pricing models. As a result of relevant assumptions, the estimated fair value does not necessarily represent the actual terms at which existing transactions could be liquidated or unwound.

The information related to “Cash and cash equivalents”, “Customers and other accounts receivable”, “Investments in joint ventures and associates”, “Promissory notes issue, government bonds, long-term notes receivable and other assets”, “Debt”, “Leases” and “Derivative financial instruments” is described in the following notes, respectively:

- Note 9, Cash and cash equivalents.
- Note 10, Customers and other financing and non-financing accounts receivable.
- Note 12, Investments in joint ventures and associates.
- Note 15, Promissory notes issue, government bonds, long-term notes receivable, government bonds and other assets.
- Note 16, Debt.
- Note 17, Leases.
- Note 18, Derivative financial instruments.

B. Fair value hierarchy-

PEMEX values the fair value of its financial instruments under standard methodologies commonly applied in the financial markets. PEMEX’s related assumptions and inputs therefore fall under the three Levels of the fair value hierarchy for market participant assumptions, as described below.

The fair values determined by Level 1 inputs utilize quoted prices in active markets for identical assets or liabilities. Fair values determined by Level 2 inputs are based on quoted prices for similar assets or liabilities in active markets, and inputs other than quoted prices that are observed for assets or liabilities. Level 3 inputs are unobservable inputs for the assets or liabilities, and include situations where there is little, if any, market activity for the assets or liabilities.

Management uses appropriate valuation techniques based on the available inputs to measure the fair values of PEMEX’s applicable financial assets and financial liabilities.

When available, PEMEX measures fair value using Level 1 inputs, because they generally provide the most reliable evidence of fair value.

NOTE 9. CASH AND CASH EQUIVALENTS

As of December 31, 2021 and 2020, cash and cash equivalents were as follows:

	2021	2020
Cash on hand and in banks[i][ii]	Ps. 41,520,864	Ps. 20,211,875
Highly liquid investments [iii]	34,985,583	19,777,906
	Ps. 76,506,447	**Ps. 39,989,781**

[i] Cash on hand and in banks is primarily composed of cash in banks.

[ii] As of December 31, 2021, includes Ps. 15,461,286 in cash allocated to the retirement plan of benefits to employees. These resources are obtained from the collection of Government Bonds that will be transferred exclusively to the Fideicomiso Fondo Laboral Pemex ("Pemex Labor Fund" or "FOLAPE") for the payment of obligations related to pensions and retirement plans.

[iii] Mainly composed of short-term Mexican Government investments.

NOTE 10. CUSTOMERS AND OTHER FINANCING AND NON-FINANCING ACCOUNTS RECEIVABLE

As of December 31, 2021 and 2020, accounts receivable and other receivables were as follows:

A. Customers

	2021	2020
Domestic customers, net	Ps. 54,031,475	Ps. 35,049,717
Export customers, net	47,227,606	33,332,696
Total customers	**Ps. 101,259,081**	**Ps. 68,382,413**

Customers and other accounts receivable are presented separately in the statement of financial position to conform the financial position more clearly.

The following table shows a breakdown of accounts receivable based on their credit history at December 31, 2021 and 2020, as well as the relation between the breakdown and the impaired amount:

	Domestic customers	
	2021	2020
Current	Ps. 53,653,649	Ps. 34,034,116
1 to 30 days	876,782	535,938
31 to 60 days	384,335	110,911
61 to 90 days	46,924	19,614
More than 90 days	2,528,848	1,531,867
Total	57,490,538	36,232,446
Impaired (reserved)	(3,459,063)	(1,182,729)
Total	**Ps. 54,031,475**	**Ps. 35,049,717**

	Export customers	
	2021	2020
Current	Ps. 41,549,673	Ps. 30,346,622
1 to 30 days	4,980,175	2,925,807
31 to 60 days	12,227	73,026
61 to 90 days	47,016	8,063
More than 90 days	921,432	190,541
Total	47,510,523	33,544,059
Impaired (reserved)	(282,917)	(211,363)
Total	**Ps. 47,227,606**	**Ps. 33,332,696**

As of December 31, 2021 and 2020, PEMEX has exposure to credit risk related to accounts receivable, see contractual payment terms in Note 7.

Additionally, the reconciliation for impaired accounts receivable is as follows:

	Domestic customers		
	2021	2020	2019
Balance at the beginning of the year	Ps. (1,182,729)	Ps. (1,100,186)	Ps. (1,409,014)
Impairment accounts receivable	(2,276,334)	(82,543)	308,828
Balance at the end of the year	**Ps. (3,459,063)**	**Ps. (1,182,729)**	**Ps. (1,100,186)**

	Export customers		
	2021	2020	2019
Balance at the beginning of the year	Ps. (211,363)	Ps. (182,823)	Ps. (321,438)
Impairment accounts receivable	(72,761)	(20,353)	111,674
Translation effects	1,207	(8,187)	26,941
Balance at the end of the year	**Ps. (282,917)**	**Ps. (211,363)**	**Ps. (182,823)**

Methodology to determine the estimation of the impairment of the accounts receivable

PEMEX allocates each exposure to a credit risk grade based on data that is determined to be predictive of the risk of loss (including but not limited to, audited financial statements, management accounts and cash flow projections and available information about customers) and applying experienced credit judgment. Credit risk grades are defined using qualitative and quantitative factors that are indicative of the risk of default. Exposures within each credit risk grade are segmented by each Subsidiary Entity and its commercial business lines, so the expected credit loss rate is calculated for each segment based on actual credit loss experienced over the past two years. These rates are multiplied by scale factors to reflect differences between the economic conditions during the period over which historical data has been collected, current conditions and PEMEX's view of economic conditions over the expected lives of the receivables.

As of December 31, 2021, the expected percentage of credit loss for accounts receivable for each Subsidiary Entity and Subsidiary Company was: 5.09% for Pemex Industrial Transformation, 2.99% for Pemex Corporate, 0.58% for Pemex Logistics, 0.01% for PMI CIM and 0.8% for PMI TRD. As of December 31, 2020, the expected percentage of credit loss for accounts receivable for each Subsidiary Entity and Subsidiary Company was: 0.02% for Pemex Fertilizers, 2.42% for Pemex Industrial Transformation, 4.79% for Pemex Corporate, 1.44% for Pemex Logistics, 0.17% for PMI CIM and 0.63% for PMI TRD.

The amount of (impairment) of domestic and export customers recognized in the income statement for 2021, 2020 and 2019 was Ps. (2,349,095), Ps. (102,896) and Ps. (447,441), respectively.

B. Other financial and non-financial accounts receivable

	2021	2020
Financial assets:		
Sundry debtors[1]	Ps. 37,034,460	Ps. 28,076,118
Employees and officers	3,752,693	3,539,505
Total financial assets	**Ps. 40,787,153**	**Ps. 31,615,623**
Non-financial assets:		
Taxes to be recovered and prepaid taxes	Ps. 80,581,955	Ps. 55,187,272
Special Tax on Production and Services	53,176,800	32,657,743
Other accounts receivable	2,591,360	1,944,413
Total non-financial assets:	**Ps. 136,350,115**	**Ps. 89,789,428**

[1] Includes Ps. (210,672), Ps. (197,215) and Ps. (37,139) of impairment, as of December 31, 2021, 2020 and 2019, respectively.

NOTE 11. INVENTORIES

As of December 31, 2021 and 2020, inventories were as follows:

	2021	2020
Refined and petrochemicals products	Ps. 40,359,715	Ps. 32,175,910
Products in transit	21,614,227	3,476,807
Crude oil	18,540,376	11,997,570
Materials and products in stock	5,036,587	4,736,659
Materials in transit	313,899	76,579
Gas and condensate products	248,338	142,136
	Ps. 86,113,142	**Ps. 52,605,661**

Ps. 500,000,961, Ps. 315,288,507 and Ps. 443,727,496 of PEMEX's inventories were recognized as cost of sales as of December 31, 2021, 2020 and 2019, respectively.

NOTE 12. INVESTMENTS IN JOINT VENTURES AND ASSOCIATES

A. The investments in joint ventures and associates as of December 31, 2021 and 2020 were as follows:

	Percentage of investment	December 31, 2021	December 31, 2020
Deer Park Refining Limited	49.995%	Ps. 6,703,324	Ps. 9,635,176
Sierrita Gas Pipeline LLC	35.00%	1,187,170	1,232,464
Frontera Brownsville, LLC.	50.00%	456,503	479,520
Texas Frontera, LLC.	50.00%	195,814	197,708
CH 4 Energía, S. A. de C.V.	50.00%	174,321	141,339
Administración Portuaria Integral de Dos Bocas, S. A. de C.V.	40.00%	110,344	208,152
Other-net	Various	130,800	120,770
Total		8,958,276	12,015,129
(Impairment) in joint venture Deer Park Refining Limited[1]		(6,703,324)	—
		Ps. 2,254,952	**Ps. 12,015,129**

(1) As of December 31, 2021, the investment in Deer Park was totally impaired (see subsection B).

Profit (loss) sharing in joint ventures and associates:

	December 31,		
	2021	2020	2019
Deer Park Refining Limited	Ps. (3,374,314)	Ps. (4,056,037)	Ps. (1,438,308)
Administración Portuaria Integral de Dos Bocas, S.A. de C.V.	(97,809)	42,782	46,893
Sierrita Gas Pipeline LLC	200,260	182,805	118,959
Frontera Brownsville, LLC.	34,670	55,738	47,719
CH4 Energía S.A. de C.V.	32,983	21,224	36,864
Texas Frontera, LLC.	20,892	34,486	47,585
Ductos el Peninsular, S. A. P. I. de C. V.	(100)	(1,097)	(17,605)
Other, net	95,311	179,566	—
(Loss) profit sharing in joint ventures and associates, net	**Ps. (3,088,107)**	**Ps. (3,540,533)**	**Ps. (1,157,893)**

In addition, as of December 31, 2021, PEMEX recognized an impairment in Deer Park of Ps. (6,703,324).

The following tables show condensed financial information of major investments recognized under the equity method as of December 31, 2021 and 2020 and for the years ended December 31, 2021, 2020 and 2019:

i. Joint venture

Condensed statements of financial position

Deer Park Refining Limited

	December 31,	
	2021	2020
Cash and cash equivalents	Ps. 16,961	Ps. 29,504
Other current assets	2,747,712	294,742
Current assets	2,764,673	324,246
Non-current assets	43,991,962	43,348,665
Total assets	**46,756,635**	**43,672,911**
Current financial liabilities	20,056,315	11,617,624
Other current liabilities	1,040,825	523,354
Current liabilities	21,097,140	12,140,978
Non-current financial liabilities	11,000,707	11,158,305
Other liabilities	1,250,799	1,101,348
Non-current liabilities	12,251,506	12,259,653
Total liabilities	33,348,646	24,400,631
Total equity	13,407,989	19,272,280
Total liabilities and equity	**Ps. 46,756,635**	**Ps. 43,672,911**

Condensed statements of comprehensive income

Deer Park Refining Limited

	December 31,		
	2021[4]	2020[2]	2019[3]
Sales and other income	Ps. 10,706,417	Ps. 8,114,474	Ps. 13,560,847
Costs and expenses	12,539,324	10,770,248	11,775,836
Depreciation and amortization	4,223,056	4,776,575	4,088,972
Interest paid	684,673	674,504	565,392
Income tax	8,660	6,028	7,551
Net result	**Ps. (6,749,296)**	**Ps. (8,112,881)**	**Ps. (2,876,904)**

(1) The net loss was due unexpected repairs in the main distillation and coking unit of the refinery and heavy snowfalls in the Texas area, which caused a decrease in the processing of crude oil in refined products.

(2) The net loss in 2020, was the result of the economic slowdown and the decline in consumption of refined products caused by COVID-19.

(3) 2019 net loss was due to the major maintenance of the Refinery that produced a decrease in the processing of crude oil in refined products.

ii. Associates

Condensed statements of financial position

Sierrita Gas Pipeline, LLC

	December 31,	
	2021	**2020**
Current assets	Ps.134,266	Ps.186,919
Non-current assets	3,354,987	3,417,052
Total assets	3,489,253	3,603,971
Current liabilities	97,339	82,647
Total liabilities	97,339	82,647
Total equity	3,391,914	3,521,324
Total liabilities and equity	**Ps. 3,489,253**	**Ps. 3,603,971**

Condensed statements of comprehensive income

Sierrita Gas Pipeline, LLC

	December 31,		
	2021	**2020**	**2019**
Sales and other income	Ps. 957,549	Ps. 942,024	Ps. 669,579
Costs and expenses	385,376	419,729	329,695
Net result	**Ps. 572,173**	**Ps. 522,295**	**Ps. 339,884**

B. Additional information about the significant investments in joint ventures and associates is presented below:

- *Deer Park Refining Limited Partnership L.P.* ("Deer Park") *(Joint venture)*. On March 31, 1993, PMI NASA acquired 49.995% of the Deer Park Refinery. In its capacity as general partner of Deer Park Refining Limited Partnership, Shell was responsible for the operation and management of the refinery (installed capacity of approximately 340,000 barrels per day of crude oil).

  Management decisions were made jointly with respect to investment in or disposal of assets, distribution of dividends, indebtedness and equity operations. In accordance with the investment contract and the operation of the agreement, the participants had the rights to the net assets in the proportion of their participation. This joint venture was recorded under the equity method.

  The investment in Deer Park as of December 31, 2021 was Ps. 6,703,324, which represented the PMI NASA's 49.995% in Deer Park (see subsection A).

  COVID-19 negatively impacted the energy industry due to mobility restrictions and stoppages in several industries; for the Deer Park refinery these impacts were observed on the reduction in refining margins due to lower demand in fuels. Therefore, at the beginning of 2021 Deer Park's partners decided to support the refinery financially, given problems with liquidity toward the end of 2020.

  The support from Deer Park's partners allowed us to continue the operation of the refinery. During 2021, there were three material impacts on the results:

  a. Low refining margins due to lower international demand as a result of the COVID-19 pandemic.

  b. Winter Storm Suspension. In February 2021, industries within the Texas area were affected by heavy snowfall. For Deer Park refinery, this scenario resulted in a total emergency stoppage and the activities resumed by the last week of March 2021. However, repair activities were required and were completed in November 2021.

c. As established under the Renewable Fuel Standard Program of the Environmental Protection Agency of the United States of America, we are required to blend renewable products for transportation fuels, which led to an increase in renewable blending cost obligations from a higher price of *"Renewal Identification Numbers."*

As a result, indications of impairment were identified, and at the end of 2021, impairment tests were carried out on the amount of the investment recognized in Deer Park, and the result was the recognition of a total impairment in the book value of the investment as of December 31, 2021 of Ps. 6,703,324, which is presented as a separate line item in the Statement of Comprehensive Income.

PEMEX determined the fair value of the joint venture under the market approach, with information from an observable transaction between independent parties, duly informed and in a market of free competition. In this observable transaction, the total value of the debt was agreed as the fair value of Deer Park.

In January 2022, PEMEX acquired the remaining 50.005% interest in Deer Park (see Note 28-F).

Associates

- *Sierrita Gas Pipeline LLC.* This company was created on June 24, 2013. Its main activity is the developing of projects related to the transportation infrastructure of gas in the United States. This investment is recorded under the equity method.
- *Frontera Brownsville, LLC*. Effective April 1, 2011, PMI SUS entered into a joint venture with TransMontaigne Operating Company L.P (TransMontaigne) to create Frontera Brownsville, LLC. Frontera Brownsville, LLC was incorporated in Delaware, United States, and has the corporate power to own and operate certain facilities for the storage and treatment of clean petroleum products. This investment is recorded under the equity method.
- *Texas Frontera, LLC*. This company was constituted on July 27, 2010, and its principal activity is the lease of tanks for the storage of refined product. PMI SUS, which owns 50% interest in Texas Frontera, entered into a joint venture with Magellan OLP, L.P. (Magellan), and together they are entitled to the results in proportion of their respective investment. The company has seven tanks with a capacity of 120,000 barrels per tank. This joint venture is recorded under the equity method.
- *CH4 Energía, S.A. de C.V.* This company was constituted on December 21, 2000. CH4 Energía engages in the purchase and sale of natural gas and in activities related to the trading of natural gas, such as transport and distribution in Valle de Toluca, México. This joint venture is recorded under the equity method.
- *Administración Portuaria Integral de Dos Bocas, S.A. de C.V.* This company was constituted on August 12, 1999. Its primary activity is administrating the Dos Bocas port, which is in Mexico's public domain, promoting the port's infrastructure and providing related port services. This investment is recorded under the equity method.
- *Ductos el Peninsular S.A.P.I. de C.V.* This company was created on September 22, 2014. Its primary activity is the construction and operation of an integral transportation system and storage of petroleum products in the Peninsula of Yucatán.

NOTE 13. WELLS, PIPELINES, PROPERTIES, PLANT AND EQUIPMENT, NET

As of December 31, 2021 and 2020, wells, pipelines, properties, plant and equipment, net, is presented as follows:

	Plants	Drilling equipment	Pipelines	Wells	Buildings	Offshore platforms	Furniture and equipment	Transportation equipment	Construction in progress [1]	Land	Unproductive fixed assets	Total fixed assets
Investment												
Balances as of January 1, 2020	848,841,327	13,092,824	460,935,077	1,303,668,946	63,318,227	326,482,942	50,407,562	16,355,218	139,925,440	44,149,536	—	3,267,177,099
Acquisitions	13,934,129	246,351	1,911,502	15,602,539	1,118,794	3,696,726	294,329	552,865	131,963,334	543,472	—	169,864,041
Reclassifications	(1,446,201)	—	228,056	—	361,131	—	410,240	7,586	(1,234,963)	115,107	24,601	(1,534,443)
Capitalization	9,906,725	—	19,022,425	42,183,243	616,006	15,695,486	8,835	1,532	(87,150,784)	(283,468)	—	—
(Impairment)	(66,031,126)	—	(9,392,862)	(48,028,474)	(65,964)	(16,210,995)	—	—	(20,210,911)	—	—	(159,940,332)
Reversal of impairment	9,797,281	153,456	11,943,047	73,801,995	1,563,299	25,872,979	8,159	426,560	19,856	—	—	123,586,632
Disposals	(3,297,113)	—	(2,855,580)	—	(6,599,754)	(1,184,109)	(2,300,115)	(514,229)	(1,441,548)	(298,828)	(24,601)	(18,515,877)
Balances as of December 31, 2020	**Ps. 811,705,022**	**13,492,631**	**481,791,665**	**1,387,228,249**	**60,311,739**	**354,353,029**	**48,829,010**	**16,829,532**	**161,870,424**	**44,225,819**	**—**	**3,380,637,120**
Acquisitions	16,202,848	57,182	4,008,698	31,584,832	287,710	4,630,358	974,167	326,998	122,214,783	57,092		180,344,668
Reclassifications	3,218,834	—	(507,065)	64,049	115	(2,931,778)	2,049	130,971	127,142	276,866	524,679	905,862
Impairment presentation [2]	113,522,135	(1,217)	24,292,290	121,070,386	9,817,972	67,305,005	(328,799)	6,303,440	36,777,946	—	—	378,759,158
Capitalization	8,292,881	—	3,923,149	43,076,120	294,044	4,659,693	152,540	5,235,745	(65,840,388)	206,216		—
Disposals	(1,455,531)	—	(18,032,858)	(95,061,066)	—	(12,131,094)	(318,412)	(292,249)	(1,714,397)	—	(524,679)	(129,530,286)
Balances as of December 31, 2021	Ps. **951,486,189**	**13,548,596**	**495,475,879**	**1,487,962,570**	**70,711,580**	**415,885,213**	**49,310,555**	**28,534,437**	**253,435,510**	**44,765,993**	**—**	3,811,116,522
Accumulated depreciation and amortization												
Balances as of January 1, 2020	(481,465,163)	(5,517,449)	(189,419,296)	(1,025,041,461)	(43,624,163)	(193,535,087)	(43,047,957)	(7,977,961)	—	—	—	(1,989,628,537)
Depreciation and amortization	(42,071,837)	(384,993)	(14,042,861)	(56,325,342)	(1,989,834)	(11,671,929)	(2,249,987)	(895,037)	—	—	—	(129,631,820)
Reclassifications	1,782,525	—	(90,590)	—	(103,562)	—	(203,053)	149,123	—	—	—	1,534,443
Disposals	1,172,277	—	2,576,418	—	5,824,019	968,552	2,164,127	512,922	—	—	—	13,218,315
Balances as of December 31, 2020	**Ps. (520,582,198)**	**(5,902,442)**	**(200,976,329)**	**(1,081,366,803)**	**(39,893,540)**	**(204,238,464)**	**(43,336,870)**	**(8,210,953)**	**—**	**—**	**—**	**(2,104,507,599)**
Depreciation and amortization	(39,126,110)	(395,756)	(16,731,217)	(56,070,192)	(1,846,486)	(16,627,864)	(2,008,187)	(625,553)	—	—	—	(133,431,365)
Reclassifications	(4,541,518)	15,413	(90,202)	(89,082)	5,701,953	51,568	59,141	103,085	(2,116,220)	—	—	(905,862)
Impairment presentation [2]	(113,522,135)	1,217	(24,292,290)	(121,070,386)	(9,817,972)	(67,305,005)	328,799	(6,303,440)	(36,777,946)	—	—	(378,759,158)
(Impairment)	(43,670,755)	—	(25,193,511)	(62,151,433)	—	(5,503,546)	—	(108,749)	(21,233,314)	—	—	(157,861,308)
Reversal of impairment	38,499,016	—	23,545,676	72,569,176	—	20,727,844	—	—	1,309,001	—	—	156,650,713
Disposals	453,965	—	7,300,538	65,307,692	—	8,820,911	261,910	85,648	—	—	—	82,230,664
Balances as of December 31, 2021	Ps. **(682,489,735)**	**(6,281,568)**	**(236,437,335)**	**(1,182,871,028)**	**(45,856,045)**	**(264,074,556)**	**(44,695,207)**	**(15,059,962)**	**(58,818,479)**	**—**	**—**	(2,536,583,915)
Wells, pipelines, properties, plant and equipment—net as of December 31,2020	Ps. **291,122,824**	**7,590,189**	**280,815,336**	**305,861,446**	**20,418,199**	**150,114,565**	**5,492,140**	**8,618,579**	**161,870,424**	**44,225,819**	**—**	1,276,129,521
Wells, pipelines, properties, plant and equipment—net as of December 31,2021	Ps. **268,996,454**	**7,267,028**	**259,038,544**	**305,091,542**	**24,855,535**	**151,810,657**	**4,615,348**	**13,474,475**	**194,617,031**	**44,765,993**	**—**	1,274,532,607

	Plants	Drilling equipment	Pipelines	Wells	Buildings	Offshore platforms	Furniture and equipment	Transportation equipment	Construction in progress [1]	Land	Unproductive fixed assets	Total fixed assets
Depreciation rates	3 to 5%	5%	2 to 7%	—	3 to 7%	4%	3 to 10%	4 to 20%	—	—	—	—
Estimated useful lives	20 to 35	20	15 to 45	—	33 to 35	25	3 to 10	5 to 25	—	—	—	—

[1] Mainly wells, pipelines and plants.

[2] To present the accumulated effect of impairment as part of the accumulated depreciation and amortization. This presentation does not affect the net value of wells, pipelines, properties, plant and equipment.

A. As of December 31, 2021, 2020 and 2019, the financing cost identified with fixed assets in the construction or installation stage, capitalized as part of the value of such fixed assets, was Ps. 3,106,007, Ps. 3,893,248 and Ps. 2,959,025, respectively. Financing cost rates during 2021, 2020 and 2019 were 6.10% to 7.05%, 5.75% to 7.08% and 5.27% to 6.84%, respectively.

B. The combined depreciation of fixed assets and amortization of wells for the fiscal years ended December 31, 2021, 2020 and 2019, recognized in operating costs and expenses, was Ps. 133,431,365, Ps. 129,631,820 and Ps. 137,187,010, respectively. These figures include Ps. 108,509,633, Ps. 101,339,417 and Ps. 103,173,593 for oil and gas production assets and costs related to plugging and abandonment of wells for the years ended December 31, 2021, 2020 and 2019 of Ps. 143,779, Ps. 2,731,317 and Ps. 4,700,151, respectively.

C. As of December 31, 2021 and 2020, provisions relating to future plugging of wells costs amounted to Ps. 70,144,756 and Ps. 77,125,513, respectively, and are presented in the “Provisions for plugging of wells” (see Note 20).

D. As of December 31, 2021, 2020 and 2019, acquisitions of property, plant and equipment include transfers from wells unassigned to a reserve for Ps. 15,608,296, Ps. 6,229,356 and Ps. 5,986,055 respectively (see Note 14).

E. As of December 31, 2021, 2020 and 2019, the translation effect of property, plant and equipment items from a different currency than the presentation currency was Ps. 2,477,528, Ps. 490,203 and Ps. (1,776,684), respectively, which was mainly plant.

F. As of December 31, 2021, 2020 and 2019, PEMEX recognized a net impairment of Ps. (1,210,595), Ps. (36,353,700), Ps. (31,283,154), respectively, which is presented as a separate line item in the consolidated statement of comprehensive income as follows:

	2021			2020			2019		
	(Impairment)	Reversal of impairment	(Impairment) / Reversal of impairment, net	(Impairment)	Reversal of impairment	(Impairment) / Reversal of impairment, net	(Impairment)	Reversal of impairment	(Impairment) / Reversal of impairment, net
Pemex Exploration and Production	Ps. (28,140,777)	62,703,608	**34,562,831**	(31,882,681)	66,914,222	**35,031,541**	(133,523,711)	29,487,824	**(104,035,887)**
Pemex Industrial Transformation	(32,714,562)	561,370	**(32,153,192)**	(71,761,571)	—	**(71,761,571)**	(1,275,480)	43,519,422	**42,243,942**
Pemex Logistics	(3,161,108)	—	**(3,161,108)**	—	426,560	**426,560**	—	34,119,240	**34,119,240**
PMI Azufre Industrial	(176,674)	—	**(176,674)**	—	42,214	**42,214**	(796,263)	—	**(796,263)**
Gas Bienestar	(282,452)	—	**(282,452)**						
Pemex Fertilizers	—	—	**—**	(92,444)	—	**(92,444)**	(2,298,775)	—	**(2,298,775)**
PMI NASA	—	—	**—**	—	—	**—**	(1,162,014)	646,603	**(515,411)**
Total	Ps. (64,475,573)	63,264,978	**(1,210,595)**	(103,736,696)	67,382,996	**(36,353,700)**	(139,056,243)	107,773,089	**(31,283,154)**

Cash-Generating Unit of Pemex Exploration and Production

As of December 31, 2021, 2020 and 2019, Pemex Exploration and Production recognized a net impairment, net reversal of impairment, and net impairment of Ps. (34,562,831), Ps. 35,031,541, and Ps. (104,035,887), respectively.

The net (impairment) and net reversal of impairment were in the following CGUs:

		2021	2020	2019
Chuc	Ps.	26,962,489	—	—
Crudo Ligero Marino		20,238,978	—	949,645
Aceite Terciario del Golfo		13,493,509	29,954,188	—
Arenque		803,256	—	—
Tamaulipas Constituciones		684,765	—	—
Ixtal - Manik		481,673	—	—
Cuenca de Macuspana		38,938	735,919	—
Cantarell		—	23,218,889	—
Burgos		—	9,084,982	7,929,552
Tsimin Xux		—	3,920,244	—
Yaxche		—	—	20,608,627
Reversal of impairment		62,703,608	66,914,222	29,487,824
Burgos		(12,517,196)	—	—
Cantarell		(5,782,224)	—	(48,664,886)
Tsimin Xux		(4,600,479)	—	(1,062,635)
Antonio J. Bermúdez		(1,815,596)	(9,705,730)	(3,562,021)
Ebano		(1,281,396)	—	—
Misión		(908,043)		
Lakach		(705,781)	(1,269,083)	(56,119)
Ogarrio Magallanes		(530,062)	—	—
Chuc		—	(11,321,001)	(25,431,950)
Ayín Alux		—	(3,269,173)	(2,220,696)
Tamaulipas Constituciones		—	(2,819,337)	—
Crudo Ligero Marino		—	(2,213,428)	—
Arenque		—	(803,256)	—
Ixtal – Manik		—	(481,673)	(5,047,793)
Aceite Terciario del Golfo		—	—	(46,284,407)
Cuenca de Macuspana		—	—	(166,013)
Poza Rica		—	—	(1,027,191)
(Impairment)		(28,140,777)	(31,882,681)	(133,523,711)
Reversal (impairment) net	**Ps.**	**34,562,831**	**35,031,541**	**(104,035,887)**

As of December 31, 2021, Pemex Exploration and Production recognized a net reversal of impairment of Ps. 34,562,831 mainly due to: (i) an increase in crude oil prices, generating a positive effect of Ps. 143,823,094 mainly in Aceite Terciario del Golfo ("ATG"), Chuc, Crudo Ligero Marino and Ixtal Manik CGUs; (ii) the positive effect due to an exchange rate of Ps. 13,361,080, from Ps. 19.9478 = U.S. $1.00 as of December 31, 2020, to Ps. 20.5835 = U.S. $1.00 as of December 31, 2021; and (iii) a slight positive effect in the discount rate of Ps. 624,875, or in percentage terms, from 6.23% in 2020 to 6.89% in 2021. These effects were partially offset by (i) a decrease in production profiles volume in the barrel of crude oil equivalent of Ps. 34,944,968 and higher transportation and distribution costs of Ps. 67,992,525 mainly in Cantarell, Burgos, Antonio J. Bermúdez and Macuspana, CGUs; (ii) an increase in proven reserves in the new Ixachi, Quequi, Xikin, Jaatsul, Cheek, Uchbal, TetL, Teekit, Suuk, Pokche and Mulach fields; (iii) a negative tax effect of Ps. 18,119,284, due to higher income as a result of an increase in hydrocarbon prices, exchange rate and an increase in the discount rate with respect to December 31, 2020 mainly in ATG, Chuc, Crudo Ligero Marino and Tsimin Xux CGUs; and (iv) an impairment of Ps. 2,189,440 in Exploration and Extraction Contracts for Misión and Ébano CGUs.

As of December 31, 2020, Pemex Exploration and Production recognized a net reversal of impairment of Ps. 35,031,541 mainly due to: (i) an increase in crude oil prices, generating a positive effect of Ps. 50,763,557 mainly in the Cantarell and Aceite Terciario del Golfo (ATG) CGUs (ii) an increase in the volume of barrels of crude oil equivalent, generating an effect of Ps. 33,784,306 mainly in the ATG, Burgos and Crudo Ligero Marino CGUs. Additionally, there were increases in proven reserves in new fields, including Ixachi, Xikin, Jaatsul, Cheek, Uchbal, Tetl, Teekit, Suuk, Pokche and Mulach; (iii) the positive effect due to an exchange rate of Ps. 21,067,337, mainly in Cantarell, ATG and Burgos CGUs, from Ps. 18.8452 = U.S. $1.00 as of December 31, 2019 to Ps. 19.9487 = U.S. $1.00 as of December 31, 2020; (iv) an increase in taxes of Ps. 3,844,410 was recognized due to a lower income in the

production and price profiles as compared to December 31, 2019, impacting Antonio J. Bermúdez, Chuc and Tsimin Xux CGUs, among others. These effects were partially offset by an increase in the discount rate of Ps. 74,428,069, or in percentage terms, from 6.18% in 2019 to 6.23% in 2020, which motivated the CGUs with higher revenues, sales volume, price and exchange rates to recognize this effect.

As of December 31, 2019, Pemex Exploration and Production recognized a net impairment of Ps. (104,035,887) mainly due to: (i) a decrease in production profiles volume in the barrel of crude oil equivalent generating a negative effect of Ps. (225,019,093), mainly in the Aceite Terciario del Golfo ("ATG"), Cantarell Chuc and Crudo Ligero Marino CGU. There were increases in the volume production profiles of new fields located in the CGU Yaxche (Xikin, Tetl, Teekit, Suuk, Pokche and Mulach fields) and Cuenca the Veracruz CGU (Ixachi field); however, these effects were only offset by those CGUs that presented a decrease in their production profiles; (ii) a decrease in crude oil and gas prices, generating a negative effect of Ps. (58,110,000) mainly in Cantarell, ATG, Chuc and Tsimin Xux ; (iii) a decrease in exchange rate from Ps. 19.6829 = U.S. $1.00 as of December 31, 2018 to Ps. 18.8452 = U.S. $1.00 of December 31, 2019 resulting in a negative effect of Ps. (15,307,000) mainly in Cantarell, Yaxché, Chuc and Tsimin Xux CGUs; (iv) derived from the application of the Energy Reform in 2013, which defined that the exploratory wells of Round 1.3 will not contribute resources to Pemex Exploration and Production, and for that reason, an impairment of Ps. (9,477,854) was recognized. These effects were offset by (i) an increase in discount rate of Ps. 120,821,000 due to the updating of comparable companies taken as reference to the determination of the discount rate with the same risk profile, mainly in the ATG, Cantarell and Chuc; (ii) a net benefit from lower income in production profile of Ps. 17,258,000, mainly in ATG, Cantarell and Chuc as a result of lower income in their production profiles; and (iii) during 2020, Pemex Exploration and Production carried out an analysis of the distribution of costs used for the determination of the value in use of some of the CGUs, resulting in changes associated with the distribution of costs of internal services, as well as an improvement in the determination of cost-sharing factors, resulting in Ps. 65,799,060 of reversal of impairment.

The CGUs of Pemex Exploration and Production are investment projects in productive fields with hydrocarbon reserves associated with proved reserves. These productive hydrocarbon fields contain varying degrees of heating power consisting of a set of wells and are supported by fixed assets associated directly with production, such as pipelines, production facilities, offshore platforms, specialized equipment and machinery.

Each project represents the smallest unit which can concentrate the core revenues, with clear costs and expenses that enable future cash flows (value in use) to be determined.

Pemex Exploration and Production determines the recoverable amount of fixed assets based on the long-term estimated prices for Pemex Exploration and Production's proved reserves. The recoverable amount on each asset is the value in use.

To determine the value in use of long-lived assets associated to hydrocarbon extraction, the net present value of reserves is determined based on the following assumptions:

	2021	2020	2019
Average crude oil price.....	56.60 USD/bl	52.96 USD/bl	48.69 USD/bl
Average gas price	4.66 USD/mpc	5.21 USD/mpc	5.07 USD/mpc
Average condensates price.....	65.50 USD/bl	61.09 USD/bl	57.67 USD/bl
After-tax discount rate	6.89% annual	6.23% annual	6.18% annual
Pre-tax discount rate	10.68% annual	9.72% annual	9.67% annual

For 2021, 2020 and 2019 the total forecast production, calculated with a horizon of 25 years, was 7,341 million, 6,731 million and 7,123 million barrels per day of crude oil equivalent, respectively.

Pemex Exploration and Production, in compliance with practices observed in the industry, estimates the recovery value of an asset by determining its value in use, based on cash flows associated with proved reserves after taxes and using a discount rate, also after taxes. Cash flows related to plugging wells provision costs are excluded in this computation of discounted cash flows.

As of December 31, 2021, 2020 and 2019, values in use for CGU with impairment or reversal of impairment are:

		2021	2020	2019
Chuc	Ps.	86,217,289	63,880,611	72,301,156
Aceite Terciario del Golfo		75,544,451	39,947,448	12,667,016
Cantarell		54,669,897	125,953,979	101,446,620
Crudo Ligero Marino		34,424,670	24,233,795	18,935,146
Tsimin Xux		29,336,464	25,910,556	28,116,300
Ogarrio Magallanes		25,089,823	—	—
Ixtal – Manik		23,071,621	12,647,284	19,024,166
Antonio J. Bermúdez		18,666,302	24,027,588	39,195,252
Ebano		7,573,109	—	—
Arenque		5,989,783	4,908,009	—
Tamaulipas Constituciones		5,878,883	5,416,487	—
Burgos		4,403,791	17,487,412	10,731,645
Cuenca de Macuspana		722,874	1,096,972	432,365
Misión		101,442	—	—
Ayín Alux		—	6,213,753	2,705,441
Lakach		—	(169,119)	(2,426,036)
Yaxche		—	—	93,677,507
Poza Rica		—	—	15,029,941
Total	**Ps.**	**371,690,399**	**351,554,775**	**411,836,519**

Cash-Generating Units of Pemex Industrial Transformation

As of December 31, 2021, 2020 and 2019, Pemex Industrial Transformation recognized a net impairment, a net reversal of impairment and a net reversal of impairment of Ps. (32,153,192), Ps. (71,761,571) and Ps. 42,243,942, respectively.

The net (impairment) and net reversal of impairment were in the following CGUs:

		2021	2020	2019
Madero Refinery	Ps.	(13,216,074)	(18,412,687)	—
Tula Refinery		(6,446,357)	(2,820,750)	—
Minatitlán Refinery		(4,678,358)	(37,432,703)	—
Salina Cruz Refinery		(3,263,131)	—	—
Cadereyta Refinery		(2,195,115)	(2,083,755)	—
Salamanca Refinery		(2,187,781)	(5,386,525)	—
Cosoleacaque Petrochemical Complex		(726,631)	—	—
Cangrejera Ethylene Processor Complex		(1,115)	(1,484,489)	—
Morelos Petrochemical Complex		—	(2,048,039)	—
Nuevo Pemex Gas Processor Complex		—	(1,080,831)	—
Ciudad Pemex Gas Processor Complex		—	(709,127)	—
Morelos Ethylene Processor Complex		—	(302,665)	—
Pajaritos Petrochemical Complex		—	—	(1,275,480)
(Impairment)		(32,714,562)	(71,761,571)	(1,275,480)
Morelos Petrochemical Complex		365,522	—	7,547,233
Pajaritos Petrochemical Complex		195,848	—	—
Cosoleacaque Petrochemical Complex		—	—	—
Minatitlán Refinery		—	—	9,391,433
Tula Refinery		—	—	2,180,073
Salina Cruz Refinery		—	—	13,535,526
Madero Refinery		—	—	7,721,233
Cangrejera Petrochemical Complex		—	—	3,143,924
Reversal of de impairment		561,370	—	43,519,422
Net (impairment) reversal of impairment	Ps.	**(32,153,192)**	**(71,761,571)**	**42,243,942**

As of December 31, 2021, the net impairment of Ps. (32,153,192) was mainly the result of the following factors: (i) the inability to achieve the projected production rate due to operational issues; (ii) the Ultra Low Sulfur Gasoline (Gubas or ULSG) and Ultra Low Sulfur Diesel (Dubas or ULSD) projects have not received any resources for their continuation and no provision is made for the continuation of these works within the approved budget for 2022; and (iii) the total impairment in the Madero Refinery due to high operating costs and expenses. These effects were partially offset by (i) a projected increase in revenues due to the increase in sales prices for secondary petrochemical UGEs; (ii) an increase in the exchange rate of the peso against the U.S. dollar, from a peso/U.S. dollar exchange rate of Ps. 19.9487 = U.S. $1.00 as of December 31, 2020, to Ps. 20.5835 = U.S. $1.00 as of December 31, 2021; and (iii) a decrease in the discount rate from 10.83% in 2020 to 9.45% in 2021.

As of December 31, 2020, the impairment of Ps. (71,761,571) was mainly due to (i) lower production levels, mainly at the Madero, Minatitlan and Tula Refineries due to a lower crude oil processing rate than previously projected; (ii) decrease in the price of products; (iii) a decrease in the discount rate of CGUs of refined products and gas by 0.64% and 0.46% respectively, and increase in petrochemicals by 1.15% and ethylene by 0.26%; and (iv) the depreciation of the peso against the U.S. dollar, from a peso/U.S. dollar exchange rate of Ps. 18.8452 = U.S. $1.00 as of December 31, 2019 to Ps. 19.9487 = U.S. $1.00 as of December 31, 2020, which are used as cash flows when U.S. dollars are taken as reference.

In 2019, the net reversal of impairment was mainly due to (i) important maintenance plans to recover assets use levels; (ii) a greater supply of light crude oil by Pemex Exploration and Production improving the quality of refined products such as gasoline, turbosines and decreasing residual products such as fuel oil; (iii) an increase in the discount rate of CGUs of refined products, gas, petrochemicals and a decrease in ethylene by 0.03%, 0.09%, 0.06%, and 0.5% respectively, due to the effect of weighting of elements with which the references are determined; and (iv) the appreciation of the peso against the U.S. dollar, from a peso/U.S. dollar exchange rate of Ps. 19.6829 = U.S. $1.00 as of December 31, 2018 to Ps. 18.8452 = U.S. $1.00 as of December 31, 2019, which are used as cash flows when U.S. dollars are taken as reference.

To determine the value in use of long-lived assets associated with the CGUs of Pemex Industrial Transformation, the net present value of cash flows was determined based on the following assumptions:

	As of December 31,													
	2021	2020	2019	2021	2020	2019	2021	2020	2019	2021	2020	2019	2021	
	Refining			Gas			Petrochemicals		Ethylene**			Fertilizers		
Average crude oil Price..	60.40 usd	48.89 usd	54.13 usd	N.A.				N.A.		N.A.				N.A
Processed volume[i]	891 mbd	920 mbd	723 mbd	2,148 mmpcd of humid gas	2,134 mmpcd of humid gas	2,056 mmpcd of humid gas			Variable because the load inputs are diverse					
Rate of U.S. dollar.....	$ 20.5835	$ 19.9487	$ 18.8452	$ 20.5835	$ 19.9487	$ 18.8452	$ 20.5835	19.9487	$ 18.8452	$20.5835	19.9487	$18.8452	$ 20.5835	
Useful lives of the cash-generating units (year average).....	11	12	12	7	7	7	6	7	7	5	6	6	5	
Discount rate	9.45%	10.83%	11.47%	10.15%	9.76%	10.22%	8.63%	9.76%	8.61%	8.63%	8.29%	8.03%	9.96%	
Period *	2022-2033	2020 - 2032	2020 - 2032	2022 - 2029	2020 - 2027	2020 - 2027	2022 - 2027	2020 - 2027	2020 - 2027		2020-2026		2020-2026	

* The first 5 years are projected and stabilize at year 6.

** This entity was merged into Pemex Industrial Transformation on July 1, 2019.

(i) Average of the first 4 years.

N.A. Non-applicable

CGUs in Pemex Industrial Transformation are processing centers grouped according to their types of processes as refineries, gas complex processors, and petrochemical centers. These centers produce various finished products for direct sale to customers or intermediate products that can be processed in another of its CGUs or by a third party. Each processing center of Pemex Industrial Transformation represents the smallest unit that has distinguishable revenues, with clear costs and expenses that enable future cash flows (value in use) to be determined.

Cash flow determinations are made based on PEMEX's business plans, operating financial programs, forecasts of future prices of products related to the processes of the CGUs, budget programs and various statistical models that consider historical information of processes and the capacity of various processing centers.

The recoverable amount of assets is based on each asset's value in use. The value in use for each asset is calculated based on discounted cash flows, taking into consideration the volumes to be produced and sales to be carried out. As of December 31, 2021, 2020 and 2019, the value in use for the impairment of fixed assets was as follows:

		2021	2020	2019
Salamanca Refinery	Ps.	51,998,803	44,777,784	—
Tula Refinery		39,815,742	34,829,922	40,450,717
Cadereyta Refinery		39,432,148	40,793,541	—
Salina Cruz Refinery		31,909,325	30,422,588	—
Minatitlán Refinery		20,545,810	18,819,247	61,673,158
Morelos Ethylene Processor Complex		7,903,064	9,396,765	13,731,548
Cangrejera Ethylene Processor Complex		625,255	11,493,567	—
Madero Refinery		—	6,799,072	27,840,687
Pajaritos Ethylene Processor Complex		—	—	1,275,480
Total	**Ps.**	**192,230,147**	**197,332,486**	**144,971,590**

Cash-Generating Units of Pemex Logistics

As of December 31, 2021, 2020 and 2019, Pemex Logistics recognized an impairment for Ps. (3,161,108), and reversal of impairment for Ps. 426,560 and Ps. 34,119,240, respectively.

The net (impairment) and reversal of impairment were in the following CGUs:

		2021	2020	2019
Construction in progress	Ps.	(2,927,035)	—	—
Vessel		(234,073)	—	—
(Impairment)		(3,161,108)	—	—
Vessel		—	303,516	—
Land and transport (white pipelines)		—	123,044	—
Pipelines		—	—	34,119,240
Reversal of impairment		—	426,560	34,119,240
(Impairment) reversal net	**Ps.**	**(3,161,108)**	**426,560**	**34,119,240**

	As of December 31,								
	2021	2020	2019	2021	2020	2019	2021	2020	2019
	Pipelines			Landing transport			Vessel		
Discount rate	12.57%	11.97%	11.94%	12.57%	11.97%	11.94%	12.57%	11.97%	11.94%
Useful life	20	22	23	3	5	5	17	19	19

As of December 31, 2021, Pemex Logistics recognized a net impairment of Ps. (3,161,108) due to: (i) an impairment in some works in progress, for which a reservation was estimated due to the economic adjustments that PEMEX presents for these projects and (ii) an increase in the discount rate to project future cash flows from 11.97% in 2020 to 12.57% in 2021.

As of December 31, 2020, Pemex Logistics recognized a reversal of impairment in land transport and vessel CGUs for Ps. 426,560, mainly due to an increase in projected cash inflows.

The recoverable amount of assets is based on each asset's value in use. As of December 31, 2019, Pemex Logistics recognized a reversal of impairment in the CGU of pipelines for Ps. 34,119,240 mainly due to (i) a decrease in the projected cost of losses from fuels subtraction from Ps. 39,388,055 as of December 31, 2018 to Ps. 4,644,846 as of December 31, 2019, which led to an improvement in future cash flows. Furthermore, the CRE established a mechanism that allowed Pemex Logistics to recover, through the pipeline transportation fee, a significant amount of the losses derived from fuel subtraction. Finally, a decrease in the discount rate from 13.55% at the end of 2018 to 11.94% at the end of 2019 due to the differences in curves used in reference rates between Mexican pesos and U.S. dollars.

CGU in Pemex Logistics are pipelines and transport equipment.

The recoverable amounts of the assets as of December 31, 2021, 2020 and 2019, corresponding to the discounted cash flows at the rate of 12.57%, 11.97% and 11.94%, respectively, as follows:

		2021	2020	2019
TAD, TDGL, TOMS (Storage terminals)....	Ps.	76,522,522	95,169,597	147,249,859
Pipelines.....		113,847,249	88,740,662	105,319,693
Primary logistics		72,281,553	108,036,325	73,821,371
Total	**Ps.**	**262,651,324**	**291,946,584**	**326,390,923**

Cash-Generating Units of Pemex Fertilizers

CGU is a plant used in the ammonia process.

The recoverable amount of assets is based on each asset's value in use. To determine cash flows, volumes to be produced and sales to be carried out were taken into consideration.

Discount rate

The discount rates used as of December 31, 2020 and 2019 were 9.51% and 10.15% respectively, due to the updating of comparable companies taken as reference to the determination of the discount rate.

As of December 31, 2020 and 2019, Pemex Fertilizers recognized an impairment of Ps. (92,444) and Ps. (2,298,775), respectively in CGUs mentioned above. The impairment was mainly caused from (i) the decrease in projected production due to the lack of raw material, (ii) increase in raw material prices, and (iii) decrease in ammonia prices.

	As of December 31,	
	2020	2019
	Plant	
Exchange rate	19.9487	18.8452
Discount rate	9.51%	10.15%
Useful life.....	22	23

Cash-Generating Units of PMI NASA

As of December 31, 2021 and 2020, PMI NASA did not recognize any impairment change.

Cash-Generating Unit are flotating hotels ("Flotels") "Reforma Pemex" and "Cerro de la Pez" which provide food and hospitality services.

As of December 31, 2019, PMI NASA recognized an impairment of Ps. (515,411), due to (i) an impairment in the Flotel Reforma Pemex of Ps. (1,146,278) as a result of rate adjustments; and (ii) a reversal of impairment of Ps. 630,866 in the Cerro de la Pez Flotel, as a consequence of the recovery in the development of projects. The cash flow methodology was used to determine the value in use of the flotels, applying discount rates of 15.81% and 16.94% with an average useful life of 17 years. The recoverable amount of the flotels is the value in use which amounted Ps. 3,747,142.

G. PEMEX can conduct exploration and extraction activities through Exploration and Extraction Contracts ("EECs") (non-audited). The EECs are awarded individually, through associations or joint ventures based on guidelines approved by the *Comisión Nacional de Hidrocarburos* ("National Hydrocarbons Commission" or "CNH") and are classified into:

   a. Production-sharing contracts;

   b. Profit-sharing contracts;

   c. License agreements; and

   d. Service contracts.

Certain of the EECs are operated though joint arrangements, for which PEMEX recognizes in its financial statements both the rights to the assets and the obligations for the liabilities, as well as profits and losses relating to the arrangements.

EECs as of December 31, 2021 are:

a. Production-sharing contracts:

The object of the production-sharing contracts is the execution of oil activities under shared production contracts among Mexico through the Mexican Government via the CNH and Pemex Exploration and Production (as contractor), for the contractual area and the sharing of costs, risks, and terms and conditions involved in the contract and in accordance with the applicable regulations and best practices of the industry receiving, in exchange, benefits in favor of the contractor.

I. Production contracts without a partner

- Hydrocarbons Exploration and Extraction Contract for Block 29, Cuenca del Sureste, in which Pemex Exploration and Production owns 100% of the project.
- Hydrocarbon Extraction Contract for the Ek-Balam (shallow water) Block. Pemex Exploration and Production owns 100% of this contractual area.

II. Production contracts in consortium

- Exploration and Extraction Contract related to Block 2 Tampico Misantla, pursuant to a consortium formed by Pemex Exploration and Production and Deutsche Erdoel AG ("DEA") and Compañía Española de Petróleos, S. A. U., (jointly liable). The object of the contract is the realization of oil activities, under shared production contracts, by the contractor for the contractual area and the sharing of costs, risks, terms and conditions involved in the contract and in accordance with the applicable regulations and best practices of the industry, receiving in exchange, benefits in favor of the contractor. Pemex Exploration and Production and DEA each have a 50% interest in this contractual area. Pemex Exploration and Production is the operator under this contract.
- Exploration and Extraction Contract, related to Block 8 Cuencas del Sureste, pursuant to a consortium formed by Pemex Exploration and Production, EPC Hidrocarburos México, S. A. de C. V. (EPC). and Ecopetrol Global Energy, S. L. U. (jointly liable). Pemex Exploration and Production was designated by all the participating companies and with the approval of the CNH as the operator of this contract and all operational aspects of the petroleum activities will be carried out only by the operator on behalf of all participating companies. Pemex Exploration and Production and EPC each have a 50% interest in this contractual area.
- Exploration and Extraction Contract, related to Block 16, Tampico Misantla, pursuant to a consortium by Pemex Exploration and Production, Deutsche Erdoel México S. de R.L. de C.V. (as operator) and CEPSA E.P. México S. de R.L. de C.V., as jointly liable. Pemex Exploration and Production owns 40% of this contractual area, DEUTSCHE Erdoel México S. de R.L. de C.V. owns 40%, and CEPSA E.P. México S. de R.L. de C.V. owns 20%.
- Exploration and Extraction Contract, related to Block 17, Tampico Misantla, pursuant to a consortium by Pemex Exploration and Production, Deutsche Erdoel México S. de R.L. de C.V. (as operator) and CEPSA E.P. México S. de R.L. de C.V., as jointly liable. Pemex Exploration and Production owns 40% of this contractual area, Deutsche Erdoel México S. de R.L. de C.V. owns 40%, and CEPSA E.P. México S. de R.L. de C.V. owns 20%.
- Exploration and Extraction Contract, related to Block 18, Tampico Misantla, pursuant to a consortium by Pemex Exploration and Production (as operator) and CEPSA E.P. México S. de R.L. de C.V. (as partner). Pemex Exploration and Production owns 80% of this contractual area, and CEPSA E.P. México S. de R.L. de C.V. owns 20%.
- Hydrocarbons Exploration and Extraction Contract for Block 32, Cuenca del Sureste, by Pemex Exploration and Production (as operator) and Total E&P México, S.A. de C.V. (as partner). Pemex Exploration and Total E&P México, S.A. de C.V each have a 50% interest in this contractual area.
- Hydrocarbons Exploration and Extraction Contract for Block 33, Cuenca del Sureste, by Pemex Exploration and Production (as operator) and Total E&P México, S.A. de C.V. Pemex Exploration and Total E&P México, S.A. de C.V each have a 50% interest in this contractual area.
- Hydrocarbons Exploration and Extraction Contract for Block 35, Cuenca del Sureste, by Shell Exploración y Extracción de México, S.A. de C.V (as operator) and Pemex Exploration and Production. Shell Exploración y Extracción de México, S.A. de C.V. and Pemex Exploration each have a 50% interest in this contractual area.
- Exploration and Extraction Contract, related to the Santuario El Golpe Block, pursuant to a consortium formed by Pemex Exploration and Production (as partner) and Petrofac México, S.A. de C.V. (PETROFAC), as operator. Pemex Exploration and Production owns 64% of this contractual area and PETROFAC owns 36%.

- Exploration and Extraction Contract, related to the Misión Block, pursuant to a consortium formed by Pemex Exploration and Production (as partner) and Servicios Múltiples de Burgos, S.A. de C.V. (as operator). Pemex Exploration and Production owns 51% of this contractual area and Servicios Múltiples de Burgos, S.A. de C.V. owns 49%.
- Exploration and Extraction Contract, related to Ébano Block, pursuant to a consortium formed by Pemex Exploration and Production (as partner), DS Servicios Petroleros, S.A. de C.V. (as operator) and D&S Petroleum S.A. de C.V. (as partner). Pemex Exploration and Production owns 45% of this contractual area, Servicios Múltiples de Burgos owns 54.99%, while D&S Petroleum S.A. de C.V. owns 0.01%.

b. License contracts

The nature of the contract relationship is the execution of oil activities, under the license contracting modality, under which the contractor is granted the right to explore and extract at its exclusive cost and risk hydrocarbons owned by the Mexican nation, who must comply with the obligations arising from the contract in the name and representation of each of the signatory companies in the contractual area in accordance with the applicable regulations, industry best practices and the terms and conditions of the contract. The contractor shall be entitled to payment for hydrocarbons produced, in accordance with the terms of the contracts, and after payments to the Mexican Government are made.

I. License contracts without association

- Hydrocarbons Exploration and Extraction Contract for Block 5, Plegado Perdido, in which Pemex Exploration and Production owns 100% of the project.
- Hydrocarbons Exploration and Extraction Contract for Block 18, Cordilleras Mexicanas, in which Pemex Exploration and Production owns 100% of the project.

II. License contracts in association

- Hydrocarbons Exploration and Extraction Contract for Block 3 “Plegado Perdido”, in deep waters, formed by INPEX Corporation (“INPEX”) (as partner), Chevron Energía de Mexico, S. de R.L. de C.V. (“Chevron”) (as operator) and Pemex Exploration and Production, (as partner). Chevron, Pemex Exploration and Production and INPEX have a 37.50%, 27.50% and 35.00% interest in this project, respectively, and will be jointly liable for all obligations of the contractors according to this contract regardless of their participation interest.
- Hydrocarbons Exploration and Extraction Contract for Block 2, Plegado Perdido, formed by Pemex Exploration and Production (as partner) and Shell Exploración y Extracción de México, S.A. de C.V. (as operator). Pemex Exploration and Production and Shell Exploración y Extracción de México, S.A. de C.V. each have a 50% interest in this project.
- Hydrocarbons Exploration and Extraction Contract for Block 22, Cuenca Salina, formed by Pemex Exploration and Production, Inpex E&P México, S.A. de C.V., (as partners), and Chevron (as operator). Chevron, Pemex Exploration and Production and Inpex E&P México, S.A. de C.V., have a 37.5%, 27.5% and 35% interest in this project, respectively.
- A licensing contract with BHP Billiton Petróleo Operaciones de México, S. de R.L. (“BHP Billiton”) for the Trión Block. BHP Billiton owns 60% of the contractual area, while Pemex Exploration and Production owns 40%, and each of the signatory companies are jointly liable for all obligations of the contractors.
- Hydrocarbons Exploration and Extraction Contract for the Cárdenas Mora Block, for onshore fields, formed by Pemex Exploration and Production (as partner), Petrolera Cárdenas Mora, S. A. P. I. de C. V. (as operator) and Cheiron Holding Limited (jointly liable). Pemex Exploration and Production and Petrolera Cárdenas Mora, S. A. P. I. de C. V. each have a 50% of interest in this project.
- Hydrocarbons Exploration and Extraction Contract for the Ogarrio Block, for onshore fields, formed by Pemex Exploration and Production (as partner), Deutche Erdoel México, S. de R.L. de C.V. (as operator) and DEA Deutche Erdoel, A.G. (“DEA”) (jointly liable). Pemex Exploration and Production and DEA each have a 50% interest in this project.
- Hydrocarbons Exploration and Extraction Contract for the Miquetla Block, for onshore fields, formed by Pemex Exploration and Production (as partner) and Operadora de Campos DWF, S.A. de C.V. (as operator). Pemex Exploration and Production has a 49% interest in this project while Operadora de Campos DWF, S.A. de C.V. has a 51% interest.

See below for a condensed statement of comprehensive income and condensed statement of financial position, summarizing the exploration and extraction contracts listed above:

As of /For the year ended December 31, 2021	Production-sharing contracts												
	EK-Balam	*Block 2*	*Block 8*	*Block 16*	*Block 17*	*Block 18*	*Block 29*	*Block 32*	*Block 33*	*Block 35*	*Santuario El Golpe*	*Misión*	*Ébano*
Sales:													
Net sales	20,234,738	—	—	—	—	—	—	—	—	—	1,692,156	1,333,727	783,110
Cost of sales	7,841,976	92,184	50,089	25,123	24,630	93,107	10,625	67,476	83,185	52,896	1,113,119	1,376,303	1,922,137
Gross income (loss)	12,392,762	(92,184)	(50,089)	(25,123)	(24,630)	(93,107)	(10,625)	(67,476)	(83,185)	(52,896)	579,037	(42,576)	(1,139,027)
Other income (loss), net	4,491	1,966	(1,880)	—	—	(1,506)		(2,071)	—	—	(253)	—	—
Administrative expenses	(491)	—	—	—	—	—	—	—	—	—	—	—	—
Operating income (loss)	12,397,744	(90,218)	(51,969)	(25,123)	(24,630)	(94,613)	(10,625)	(69,547)	(83,185)	(52,896)	578,784	(42,576)	(1,139,027)
Taxes, duties and other													
Net income (loss)	12,397,744	(90,218)	(51,969)	(25,123)	(24,630)	(94,613)	(10,625)	(69,547)	(83,185)	(52,896)	578,784	(42,576)	(1,139,027)
Cash and cash equivalents	—	42,061	38,606	—	—	26,230	340	37,642	—	—	15,208	—	—
Accounts receivable	56,287,626	124,199	70,571	62,230	51,129	65,333	(42,020)	136,327	156,263	348,144	10,020,481	6,539,104	2,978,251
Total current assets	56,287,626	166,260	109,177	62,230	51,129	91,563	(41,680)	173,969	156,263	348,144	10,035,689	6,539,104	2,978,251
Wells, pipelines, properties, plant and equipment, net	30,879,038	—	—	—	—	—	—	—	—	—	1,496,628	(2,720)	(40,531)
Total assets	87,166,664	166,260	109,177	62,230	51,129	91,563	(41,680)	173,969	156,263	348,144	11,532,317	6,536,384	2,937,720
Suppliers	21,301,730	(11,241)	(10,031)	78,075	82,208	738	14,423	1,007	313,501	660,569	4,601,290	3,115,048	1,683,279
Taxes and duties payable	36,240	419,672	372,025	—	—	252,913	30,894	67,450	—	—	—	—	—
Other current liabilities	4,655,538	47,138	50,347	53,145	41,450	53,392	(29,855)	264,507	62,729	48,402	2,563,436	1,543,309	500,595
Total liabilities	25,993,508	455,569	412,341	131,220	123,658	307,043	15,462	332,964	376,230	708,971	7,164,726	4,658,357	2,183,874
Equity (deficit), net	48,775,412	(199,091)	(251,195)	(43,867)	(47,899)	(120,867)	(46,517)	(89,448)	(136,782)	(307,931)	3,788,807	1,920,603	1,892,873

As of /For the year ended December 31, 2021	Trion	License contracts Block 3	Block 2	Block 5	Block 18	Block 22	Cárdenas Mora	Ogarrio	Miquetla
Sales:									
Net sales	—	—	—	—	—	—	1,601,195	1,484,990	272,349
Cost of sales	—	36,687	83,815	61,702	65,865	144,983	1,669,285	822,544	550,117
Gross income (loss)	—	(36,687)	(83,815)	(61,702)	(65,865)	(144,983)	(68,090)	662,446	(277,768)
Other income (loss), net	—	—	—	—	—	—	—	(9,903)	(93)
Administrative expenses	—	—	—	—	—	—	23,718	—	—
Operating income (loss)	—	(36,687)	(83,815)	(61,702)	(65,865)	(144,983)	(91,808)	652,543	(277,861)
Taxes, duties and other	—	—	—	—	—	—	—	—	—
Net income (loss)	—	(36,687)	(83,815)	(61,702)	(65,865)	(144,983)	(91,808)	652,543	(277,861)
Cash and cash equivalents	—	—	—	21	21	—	134	521	—
Accounts receivable	—	65,779	256,144	(223,562)	(245,997)	394,797	6,412,323	(710,357)	793,496
Total current assets	—	65,779	256,144	(223,541)	(245,976)	394,797	6,412,457	(709,836)	793,496
Wells, pipelines, properties, plant and equipment, net	—	—	—	—	—	—	1,067,318	1,377,928	(200,182)
Total assets	—	65,779	256,144	(223,541)	(245,976)	394,797	7,479,775	668,092	593,314
Suppliers	—	181,591	390,009	89,438	99,996	575,293	5,815,218	5,095,259	630,478
Taxes and duties payable	—	—	—	(158,394)	191,513	—	—	—	—
Other current liabilities	—	51,005	172,460	179,409	(176,898)	105,427	(1,390,814)	(8,042,370)	—
Total liabilities	—	232,596	562,469	110,453	114,611	680,720	4,424,404	(2,947,111)	630,478
Equity (deficit), net	—	(130,130)	(222,510)	(272,292)	(294,722)	(140,940)	3,147,179	2,962,660	240,697

NOTE 14. INTANGIBLE ASSETS, NET

At December 31, 2021 and 2020, intangible assets, net are mainly wells unassigned to a reserve and other components of intangible assets, which amounted to Ps. 20,016,146 and Ps. 22,775,784, respectively as follows:

A. Wells unassigned to a reserve

		2021	2020
Wells unassigned to a reserve:			
Balance at the beginning of the year	Ps.	21,435,160	12,831,281
Additions to construction in progress		25,377,983	23,237,519
Transfers against expenses		(12,565,711)	(8,404,284)
Transfers against fixed assets		(15,608,296)	(6,229,356)
Balance at the end of the year	**Ps.**	**18,639,136**	**21,435,160**

As of December 31, 2021, 2020 and 2019, PEMEX recognized expenses related to unsuccessful wells of Ps. 22,296,103, Ps. 19,351,986 and Ps. 79,595,185, respectively, directly in its statement of comprehensive income.

B. Other intangible assets

		Licenses	Exploration expenses, evaluation of assets and concessions	Total
As of December 31, 2021				
Cost				
Balance at the beginning of the year	Ps.	4,885,305	1,769,100	6,654,405
Additions		416,070	20,165	436,235
Disposals		(35,885)	—	(35,885)
Effects of foreign exchange		(6,667)	56,583	49,916
		5,258,823	1,845,848	7,104,671
Amortization accumulated				
Balance at the beginning of the year		(4,592,114)	(721,667)	(5,313,781)
Disposals		32,561	—	32,561
Amortization		(371,115)	(32,180)	(403,295)
Effects of foreign exchange		(19,647)	(23,499)	(43,146)
		(4,950,315)	(777,346)	(5,727,661)
Balance at the end of the year	**Ps.**	**308,508**	**1,068,502**	**1,377,010**
Useful lives		1 to 3 years	Up to 36 years	

		Licenses	Exploration expenses, evaluation of assets and concessions	Total
As of December 31, 2020				
Cost				
Balance at the beginning of the year	Ps.	4,593,100	2,174,063	6,767,163
Additions		375,801	27,785	403,586
Disposals		(139,663)	(527,489)	(667,152)
Effects of foreign exchange		56,067	94,741	150,808
	Ps.	**4,885,305**	**1,769,100**	**6,654,405**
Amortization accumulated				
Balance at the beginning of the year	Ps.	(4,232,303)	(781,617)	(5,013,920)
Disposals		138,099	132,935	271,034
Amortization		(441,229)	(37,759)	(478,988)
Effects of foreign exchange		(56,681)	(35,226)	(91,907)
		(4,592,114)	(721,667)	(5,313,781)
Balance at the end of the year	**Ps.**	**293,191**	**1,047,433**	**1,340,624**
Useful lives		1 to 3 years	Up to 36 years	

NOTE 15. PROMISSORY NOTES ISSUE, GOVERNMENT BONDS, LONG-TERM NOTES RECEIVABLE AND OTHER ASSETS

A. Promissory notes

On December 24, 2015, the SHCP published in the Official Gazette of the Federation the *Disposiciones de carácter general relativas a la asunción por parte del Gobierno Federal de obligaciones de pago de pensiones y jubilaciones a cargo de Petróleos Mexicanos y sus empresas productivas subsidiarias* (General provisions regarding the assumption by the Mexican Government of the payment obligations related to pensions and retirement plans of Petróleos Mexicanos and its productive state-owned subsidiaries). These regulations stated the terms, conditions, financing mechanisms and payment arrangements pursuant to which the SHCP would assume a portion of the payment obligations related to PEMEX's pensions and retirement plans. An independent expert reviewed the calculation, the methodology used, the maturity profile and all of the information provided by PEMEX.

In accordance with these provisions and prior to the completion of the independent expert's review described above, on December 24, 2015, the Mexican Government issued in advance payment, through the SHCP, a Ps. 50,000,000 non-negotiable promissory note due December 31, 2050 payable to Petróleos Mexicanos. The promissory note, which accrued interest at a rate of 6.93% per year, was recognized as a long-term note receivable in non-current assets once the independent expert named by SHCP concluded its review.

On August 5, 2016, Petróleos Mexicanos received promissory notes issued by the Mexican Government at a discount value of Ps. 184,230,586 as of June 29, 2016, as part of the Mexican Government's assumption of a portion of the payment liabilities related to Petróleos Mexicanos and Subsidiary Entities' pensions and retirement plans, which notes were delivered in exchange for the Ps. 50,000,000 promissory notes issued to Petróleos Mexicanos on December 24, 2015. On August 15, 2016, Petróleos Mexicanos exchanged Ps. 47,000,000 of these promissory notes for short-term floating rate Mexican Government debt securities, known as *Bonos de Desarrollo del Gobierno Federal* (Development Bonds of the Mexican Government or "BONDES D"). Petróleos Mexicanos then sold the BONDES D to Mexican development banks at market prices.

Petróleos Mexicanos recognized a Ps. 135,439,612 increase in equity as a result of the Ps. 184,230,586 of the promissory notes as of June 29, 2016, minus the Ps. 50,000,000 promissory note received by Petróleos Mexicanos on December 24, 2015, plus a Ps. 1,209,026 increase in the value of the promissory notes from June 29, 2016 to August 15, 2016, the date on which PEMEX received the promissory notes.

During the period from January 1 to November 19, 2020, PEMEX recorded Ps. 7,097,040 in accrued interest from these receivable promissory notes. This amount was recognized as financing income in the consolidated statement of comprehensive income.

Yield rates for these promissory notes were fixed all throughout their lifespans and up to their maturities.

As of December 31, 2019, as part of the Mexican Government's strategy to finance PEMEX, Petróleos Mexicanos received the prepayment of 7 promissory notes (one maturing in 2019 and 6 maturing in subsequent years) in the amount of Ps. 38,705,497

(Ps. 32,493,666 of principal and Ps. 6,211,831 of interest), which was transferred to the FOLAPE for the obligation payment related to its pension and retirement plan obligation. The monetization of 2 promissory notes took place after the document's expiration date, resulting in additional interest of Ps. 614 million.

On March 31, 2020, Petróleos Mexicanos received the payment of promissory note No. 4 in the amount of Ps. 4,983,670 (Ps. 4,102,622 of principal and Ps. 881,048 of interest), which was transferred to the FOLAPE.

On November 19, 2020, Petróleos Mexicanos and the SHCP agreed to exchange 16 promissory notes in favor of Petróleos Mexicanos (notes 5 to 20) in a total amount of Ps. 128,656,192 for 18 series of Mexican Government local bonds (the "Government Bonds"). The resources from the Government Bonds will be exclusively transferred to the FOLAPE for the payments related to its pension and retirement plan obligations.

The roll-forward related to the promissory notes is as follows:

	For the year ended December 31,
	2020[3]
Balance at the beginning of the year	Ps. 126,534,822
Collected promissory notes	(4,102,622)
Accrued interests	7,097,040
Interests received from promissory notes	(881,048)
Reversal of (impairment) of the promissory notes	8,000
Exchange from promissory notes to Bonds	(128,656,192)
Balance at the end of the period	**Ps. —**

[3] Until November 19, 2020.

B. Government bonds

As of December 31, 2021 and 2020, the balance of Government Bonds (see Note 15-A), includes Government Bonds valued at amortized cost as follows:

	2021	2020
Government bonds[1]	Ps. 110,855,356	Ps. 129,549,519
Less: current portion of Government Bonds, net of expected credit losses	1,253,451	18,036,557
Total long-term notes receivable	**Ps. 109,601,905**	**Ps. 111,512,962**

[1] As of December 31, 2021 and 2020, includes an expected credit loss of Ps. 13,038 and Ps. 17,581, respectively.

As of November 19, 2020, the value of the Government Bonds was Ps. 128,786,611, and the liability was Ps. 95,597,610.

On November 20, 2020, Petróleos Mexicanos monetized the whole of the Government Bonds by entering into a three-year financial arrangement to partially raise an equivalent of Ps. 95,597,610 at an annual rate of 8.56275%, maturing November 24, 2023. Petróleos Mexicanos retains the risks, benefits and economic rights of the Government Bonds, which were delivered to a financial institution. Petróleos Mexicanos will continue to collect coupon and principal payments from the securities throughout the term of the transaction. Therefore, Petróleos Mexicanos recognizes these Government Bonds as restricted assets and recognizes short-term debt for the monetization. The resources from the Government Bonds will be transferred to the FOLAPE for payments related to its pension and retirement plan obligations.

During the period from January 1 to December 31, 2021, interest income generated by the Government Bonds amounted to Ps. 7,094,180, of which Petróleos Mexicanos received payments in the amount of Ps. 7,126,559. Interest income generated by the Government Bonds amounted to Ps. 2,103,099 during the period from November 20, 2020 to December 31, 2020. Petróleos Mexicanos received payments in the amount of Ps. 817,270, which were recognized as financial income in the consolidated statement of comprehensive income.

As of December 31, 2021, the Government Bonds consist of 17 series of development bonds (D Bonds, M Bonds and UDI Bonds) issued by the SHCP with maturities between 2023 and 2026, with a notional amount of Ps. 102,492,032 and Ps. 913,482 in UDIs.

As of December 31, 2020, the Government Bonds consisted of 18 series of development bonds issued by the SHCP with maturities between 2021 and 2026, with a notional amount of Ps. 118,280,727 and Ps. 913,482 in UDIs.

As of December 31, 2021 and 2020, the fair value of the transferred assets was Ps. 109,124,514 and Ps. 129,320,536, respectively and the fair value of the associated liabilities was Ps. 83,869,441 and Ps. 95,630,214, respectively, resulting in a net position of Ps. 25,255,073 and Ps. 33,690,322, respectively.

As of December 31, 2021 and 2020, the recorded liability was Ps. 84,189,749 (Ps. 83,401,120 of principal and Ps. 788,629 of interest) and Ps. 96,461,665 (Ps. 95,597,610 of principal and Ps. 864,055 of interest), respectively (see Note 16).

The roll-forward of the Mexican Bonds is as follows:

		December 31,	
		2021	2020
Balance as of the beginning of the year	Ps.	129,549,519	—
Promissory notes value at the beginning of the exchange as of November 19, 2020		—	128,656,192
Financial income from the Exchange of promissory notes to Bonds		—	130,419
Initial value of Government Bonds		129,549,519	128,786,611
Government Bonds collected		(15,788,696)[1]	
Accrued interests		7,094,180	2,103,099
Interests received from bonds		(7,126,559)	(817,270)
Impact of the valuation of bonds in UDIS		459,149	(505,339)
Amortized cost		(3,336,781)	—
Reversal (Impairment) of bonds		4,544	(17,582)
Balance at the end of the year	**Ps.**	**110,855,356**	**129,549,519**

(1) Government Bonds was collected on December 9, 2021.

C. Long-term notes receivable

As of December 31, 2021 and 2020, the balance of long-term notes receivable was Ps. 1,646,290 and Ps. 886,827 and includes Ps. 833,473 of collection rights related to Value Added Tax from the non-recourse factoring contract between Pemex Logistics and Banco Mercantil del Norte, S.A.

D. Other assets

At December 31, 2021 and 2020, the balance of other assets was as follows:

		December 31,	
		2021	2020
Payments in advance[1]	Ps.	35,931,167	5,223,679
Other[2]		2,327,872	1,680,934
Insurance		853,891	678,897
Total other assets	**Ps.**	**39,112,930**	**7,583,510**

(1) Mainly advance payments to contractors for the construction of the Dos Bocas Refinery through PTI ID.

(2) Includes restricted cash for Ps. 50,661 as of December 31, 2020, as a result of a cash retention ordered by the court in a commercial judgement promoted by OPCO Soluciones, S.A. de C.V. against PEMEX's subsidiary company AGRO, due to lack of payment by this subsidiary company.

NOTE 16. DEBT

The Federal Revenue Law applicable to PEMEX as of January 1, 2021, published in the Official Gazette of the Federation on November 25, 2020, authorized Petróleos Mexicanos and its Subsidiary Entities to incur an internal net debt up to Ps. 22,000,000 and an external net debt up to U.S. $1,000,000. PEMEX can incur additional internal or external debt, as long as the total amount of net debt does not exceed the ceiling established by the Federal Revenue Law.

The Board of Directors approves the terms and conditions for the incurrence of obligations that constitute public debt of Petróleos Mexicanos for each fiscal year, in accordance with the Petróleos Mexicanos Law and the *Reglamento de la Ley de Petróleos Mexicanos* (Regulations to the Petróleos Mexicanos Law). The terms and conditions are promulgated in accordance with the guidelines approved by the SHCP for Petróleos Mexicanos for the respective fiscal year.

During the period from January 1 to December 31, 2021, PEMEX participated in the following financing activities (floating interest rates are disclosed after debt horizon table):

- On January 22, 2021, Petróleos Mexicanos entered into a credit agreement guaranteed by an export credit agency for a line of credit in the amount of U.S.$152,237 due January 2031, at a rate linked to the one-year London Inter Bank Offered Rate (LIBOR) plus 138 basis points.
- On May 10, 2021, Petróleos Mexicanos entered into a U.S. $400,000 term loan in two tranches, one of U.S. $65,000 and the second of U.S. $335,000, due March 2030 and 2031, respectively. Both tranches bear interest at a floating rate linked to six-month LIBOR plus 48 basis points.
- On May 21, 2021, Petróleos Mexicanos renewed and restructured a term loan for U.S. $300,000 which bears interest at a floating rate linked to three-month LIBOR plus a variable margin between 170 and 345 basis points determined by Petróleos Mexicanos' long-term currency denominated debt ratings.
- On July 8, 2021, Petróleos Mexicanos restructured the U.S. $150,000 term loan to a new U.S. $300,000 term loan due July 2024, which bears interest at a floating rate linked to three-month LIBOR plus 320 basis points.
- On July 16, 2021, Petróleos Mexicanos entered into a U.S. $750,000 term loan due January 2023, which bears interest at a floating rate linked to three-month LIBOR plus a variable margin between 170 and 345 basis points determined by Petróleos Mexicanos long-term currency denominated debt ratings.
- On October 19, 2021, Petróleos Mexicanos entered into a Ps. 4,000,000 term loan due April 15, 2022, which bears interest at a floating rate linked to the 182-day Interbank Equilibrium Interest Rate ("TIIE") plus 248 basis points.
- On November 18, 2021, Petróleos Mexicanos, renewed and increase a promissory note entered into July 2021, for Ps. 3,000,000 and an original term of 120 days. This renewal was carried out for Ps. 4,000,000 and a term of 120 days at a rate linked to the 91-day TIIE plus 257.5 basis points.
- On December 16, 2021, Petróleos Mexicanos, entered into a promissory note of U.S. $1,000,000 of its 6.700% Notes due 2032 under its U.S. $112,000,000 Medium Term Notes Program, Series C.
- On December 16, 2021, Petróleos Mexicanos, entered into a promissory note for the principal amount of Ps. 3,000,000 bearing interest at a floating rate linked to the 182-day TIIE plus 260 basis points, with a maturity of 180 days.
- On December 17, 2021, Petróleos Mexicanos, renewed a promissory note entered into in June 2021 for the principal amount of Ps. 2,000,000 and an original term of 180 days. This renewal was agreed for an additional 180-day term at a rate linked to TIIE plus 260 basis points. In addition, PEMEX entered into a promissory note for the principal amount of Ps. 2,000,000 bearing interest at a floating rate of the 182-day TIIE plus 260 basis points with a maturity of 180 days.
- On December 20, 2021, Petróleos Mexicanos, renewed a loan for the principal amount of Ps. 500,000 and an original term of 180 days. This renewal was agreed for an additional 180-day term at a rate linked to three-month LIBOR plus 200 basis points.
- On December 21, 2021, Petróleos Mexicanos, entered into a promissory note for the principal amount of Ps. 500,000 bearing interest at a floating rate of the 28-day TIIE plus 190 basis points with a 90-day maturity.
- On December 23, 2021, Petróleos Mexicanos completed a liability management transaction consisting of private offers to exchange and offers to purchase (collectively, the "Offers"), pursuant to which PEMEX issued an additional U.S. $5,813,567,000 aggregate principal amount of its 6.700% Notes due 2032 and paid an amount of cash equal to U.S. $4,484,800 as consideration for the securities accepted in the Offers, accrued and unpaid interest and other transaction fees, costs and expenses in connection with the Offer.

All of the debt securities listed above are jointly and severally guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation, Pemex Logistics and their respective successors and assignees.

As of December 31, 2021, PEMEX had U.S. $7,664,000 and Ps. 37,000,000 in available credit lines in order to provide liquidity, of which only U.S. $50,000 are available.

All of the financing activities mentioned above were guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics and their respective successors and assignees.

From January 1 to December 31, 2021, PMI Trading obtained U.S. $43,292,749 from its revolving credit line and repaid U.S. $43,369,772. As of December 31, 2021, the outstanding amount under this revolving credit line was U.S. $2,310,042.

The *Ley de Ingresos de la Federación* ("Federal Revenue Law") applicable to PEMEX as of January 1, 2020, published in the Official Gazette of the Federation on November 25, 2019, authorized Petróleos Mexicanos and its Subsidiary Entities to incur an internal net debt up to Ps. 10,000,000 and an external net debt up to U.S. $1,250,000. PEMEX can incur additional internal or external debt, as long as the total amount of net debt (Ps. 34,875,000, equivalent to U.S. $1,851,000) does not exceed the ceiling established by the Federal Revenue Law.

The Board of Directors approves the global financing proposal of public debt of Petróleos Mexicanos, in order to incorporate it into the Federal Revenue Law for the fiscal year 2020, in accordance with the Petróleos Mexicanos Law and the *Reglamento de la Ley de Petróleos Mexicanos* (Regulations to the Petróleos Mexicanos Law).

During the period from January 1 to December 31, 2020, PEMEX participated in the following financing activities:

- On January 21, 2020, Petróleos Mexicanos increased its Medium-Term Notes Program from U.S. $102,000,000 to U.S. $112,000,000.
- On January 28, 2020, Petróleos Mexicanos issued U.S. $5,000,000 of debt securities under its U.S. $112,000,000 Medium-Term Notes Program, Series C, in two tranches:
    - (1) U.S. $2,500,000 5.950% Notes due 2031
    - (2) U.S. $2,500,000 6.950% Notes due 2060

All debt securities under this program are jointly and severally guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics and their respective successors and assignees.

- On January 30, 2020, Petróleos Mexicanos repurchased a total of U.S. $61,992 notes due 2020.
- On February 6, 2020, Petróleos Mexicanos consummated the early settlement of its waterfall exchange offer pursuant to which it exchanged:

A) a total of U.S. $1,252,303 of notes and bonds with maturity dates between 2021 and 2026 as follows:

- (1) U.S. $264,752 aggregate principal amount of its outstanding 5.500% Notes due 2021,
- (2) U.S. $171,662 aggregate principal amount of its outstanding 6.375% Bonds due 2021,
- (3) U.S. $148,535 aggregate principal amount of its outstanding 4.875% Notes due 2022,
- (4) U.S. $63,854 aggregate principal amount of its outstanding Floating Rate Notes due 2022,
- (5) U.S. $157,487 aggregate principal amount of its outstanding 5.375% Notes due 2022,
- (6) U.S. $216,727 aggregate principal amount of its outstanding 3.500% Notes due 2023,
- (7) U.S. $117,333 aggregate principal amount of its outstanding 4.625% Notes due 2023 and
- (8) U.S. $111,953 aggregate principal amount of its outstanding 4.500 % Notes due 2026,

for U.S. $1,300,000 aggregate principal amount of its new 5.950% Notes due 2031.

B) a total of U.S. $1,374,426 of notes and bonds with maturity dates between 2044 and 2048 as follows:

- (1) U.S. $179,332 aggregate principal amount of its outstanding 5.500% Notes due 2044,
- (2) U.S. $750,969 aggregate principal amount of its outstanding 5.625% Bonds due 2046 and
- (3) U.S. $444,125 aggregate principal amount of its outstanding 6.350% Notes due 2048,

for U.S. $1,300,000 aggregate principal amount of its new 6.950% Bonds due 2060.

The 5.950% Notes due 2031 and 6.950% Bonds due 2060 are jointly and severally guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics and their respective successors and assignees and represent reopenings of the 5.950% Notes due 2031 and 6.950% Bonds due 2060, respectively, originally issued on January 29, 2020.

- On May 26, 2020, Petróleos Mexicanos partially renewed a credit line of U.S. $400,000 maturing on May 2020 for U.S. $200,000 maturing in 2021 linked to three-month LIBOR plus 350 basis points.
- On August 24, 2020, Petróleos Mexicanos entered into a U.S. $150,000 term loan due August 2022, which bears interest at a floating rate linked to three-month LIBOR plus 425 basis points.
- On October 16, 2020, Petróleos Mexicanos issued U.S. $1,500,000 of its 6.875% Notes due October 2025 under its U.S. $112,000,000 Medium Term Notes Program, Series C.
- On November 20, 2020, Petróleos Mexicanos monetized the Government Bonds by entering into a three-year financial arrangement to raise Ps. 95,597,610 at a rate of 8.56275% per annum, with a maturity of November 24, 2023. Petróleos Mexicanos retains the economic rights of the New Government Bonds, accordingly Petróleos Mexicanos accounts for them as restricted assets and recognizes debt for this transaction. (See Note 15-B)
- On December 7, 2020, PMI Trading, as borrower, and Petróleos Mexicanos, as guarantor, entered into a U.S. $1,500,000 revolving credit facility maturing in 2023, which bears interest at a floating rate linked to LIBOR plus 300 to 475 basis points.
- On December 15, 2020, PEMEX implemented a financial factoring transaction to support its suppliers for an amount of Ps. 4,067,650 for 180 days at the TIIE or for 91 days at a rate of 172 to 247 basis points.

Petróleos Mexicanos renewed and restructured one of its liquidity management lines for which it entered into a new revolving credit contract with a banking union. This new line was made available to PMI Trading, with Petróleos Mexicanos' corporate guarantee to meet its financial needs and strengthen PEMEX's liquidity.

As of December 31, 2020, PEMEX had U.S. $7,700,000 and Ps. 37,000,000 in available credit lines in order to provide liquidity, of which U.S. $1,900,000 and Ps. 37,000,000 are available.

All of the financing activities mentioned above were guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics and their respective sucessors and assignees.

On December 1, 2020, credit lines operated by HHS were transferred to PMI Trading. From January 1 to December 31, 2020, PMI Trading obtained U.S. $28,489,000 from its revolving credit line and repaid U.S. $27,657,935. As of December 31, 2019, the outstanding amount under this revolving credit line was U.S. $1,556,000. As of December 31, 2020, the outstanding amount under this revolving credit line was U.S. $2,387,065.

Various financial transactions (including credit facilities and bond issuances) require compliance with various covenants that, among other things, place restrictions on the following types of transactions by PEMEX, subject to certain exceptions:

- The sale of substantial assets essential for the continued operations of its business.
- The incurrence of liens against its assets.
- Transfers, sales or assignments of rights to payment not yet earned under contracts for the sale of crude oil or natural gas, accounts receivable or other negotiable instruments.

As of December 31, 2021 and 2020 and as of the date of the issuance of these consolidated financial statements, PEMEX was in compliance with the covenants described above.

As of December 31, 2021 and 2020, debt was as follows:

			2021	
	Rate of interest [1]	Maturity	Pesos	Foreign currency
U.S. dollars				
Bonds	Fixed from 1.7% to 9.5% and LIBOR plus 0.35% to 3.65%	Various to 2060	1,242,945,106	US$ 60,385,508
Project financing	LIBOR plus 0.28% to 1.75%	Various to 2031	33,596,532	1,632,207
Direct loans	Fixed from 5.25% and LIBOR plus 1.07% to 3.50%.	Various to 2031	60,802,906	2,953,963
Syndicated loans	LIBOR plus 2.35%	Various to 2024	51,458,750	2,500,000
Bank loans	Fixed at 3.50% and LIBOR plus 1.19% and 1.25%	Various to 2023	407,929	19,818
Revolving credit lines	LIBOR plus 2.0% to 3.75% and Fed effective plus 1.30%	2022	160,379,535	7,791,655
Financing of Infrastructure asset	Fixed from 5.40% and 8.40%	Various to 2036	27,232,062	1,323,004
Total financing in U.S. dollars			1,576,822,820	US$ 76,606,155
Euros				
Bonds	Fixed from 1.875% to 5.5% EURIBOR plus 2.4%	Various to 2030	254,527,144	€ 10,873,232
Direct loans	Fixed at 5.11%	Various to 2023	11,704,300	500,000
Total financing in Euros			266,231,444	€ 11,373,232
Japanese yen				
Bonds	Fixed from 0.54% to 3.5%	Various to 2026	19,663,527	109,913,510
Pesos				
Certificados bursátiles	TIIE plus 1.00% and Fixed from 7.19% to 7.47%	Various to 2026	93,428,071	
Direct loans	Fixed from 6.55% and TIIE plus 0.85% to 5.24%	Various to 2029	34,420,635	
Plus Factoring	TIIE plus 2.37% to 3.32%	2022	20,003,268	
Syndicated loans	TIIE plus 0.95	Various to 2025	15,000,000	
Revolving credit lines	TIIE plus 1.50% and 2.90%	Various to 2022	37,000,000	
Monetization of Mexican Government Bonds	Fixed from 8.56275%	Various to 2023	83,401,120	
Total financing in pesos			283,253,094	
UDIs				
Certificados bursátiles	Fixed from 3.02% to 5.23%	Various to 2035	35,454,689	
Other currencies				
Bonds	Fixed from 1.75% to 8.25%	Various to 2025	30,503,050	
Total principal in pesos [2]			2,211,928,624	
Plus:				
Accrued interest			37,338,471	
Notes payable to contractors [3]			428,799	
Total principal and interest			2,249,695,894	
Less:				
Short-term maturities			454,516,343	
Current portion of notes payable to contractors [3]			428,799	
Accrued interest			37,338,471	
Total short-term debt and current portion of long-term debt			492,283,613	
Long-term debt			**1,757,412,281**	

	2020			
	Rate of interest [1]	Maturity	Pesos	Foreign currency
U.S. dollars				
Bonds	Fixed from 1.7% to 9.5% and LIBOR plus 0.35% to 3.65%	Various to 2060	1,290,409,906	U.S.$ 64,686,41(
Project financing	Fixed from 2.45% and LIBOR plus 0.24% to 1.75%	Various to 2028	34,345,097	1,721,67
Direct loans	Fixed to 5.25% and LIBOR plus 1.75% to 4.25%	Various to 2031	28,275,087	1,417,39(
Syndicated loans	LIBOR plus 2.35%	Various to 2024	49,871,676	2,499,99(
Bank loans	LIBOR plus 3.50% to 5.28%	Various to 2023	1,170,542	58,67
Revolving credit lines	LIBOR plus 2.00% to 3.75% and Fed effective plus 1.30%	2021	119,110,538	5,970,84
Financing of Infrastructure asset	Fixed from 5.4% and 8.4%	Various to 2036	28,131,267	1,410,18(
Total financing in U.S. dollars			1,551,314,113	U.S.$ 77,765,17
Euros				
Bonds	Fixed from 1.875% to 5.5% and EURIBOR plus 2.4%	Various to 2030	307,867,094	€ 12,614,81
Direct loans	Fixed to 5.11%	Various to 2023	12,202,600	500,00(
Total financing in Euros			320,069,694	€ 13,114,81
Japanese yen:				
Bonds	Fixed from 0.54% to 3.5%	Various to 2026	21,243,790	¥ 109,900,62
Pesos				
Certificados bursátiles	TIIE plus 1.00%, and fixed at 7.19% to 7.65%	Various to 2026	113,253,512	
Direct loans	Fixed at 6.55% and TIIE plus 0.85% to 4.1%	Various to 2029	19,061,275	
Plus Factoring	TIIE plus 1.25% to 2.0%	In 2021	4,067,650	
Syndicated loans	TIIE plus 0.95%	Various to 2025	19,740,035	
Monetization of Mexican Government Bonds	Fixed at 8.56275%	Various to 2023	95,597,610	
Total financing in pesos			251,720,082	
UDIs				
Certificados bursátiles	Zero rate and Fixed at 3.02% to 5.23%	Various to 2035	37,346,014	
Other currencies:				
Bonds	Fixed from 1.75% to 8.25%	Various to 2025	33,355,569	
Total principal in pesos[2]			2,215,049,262	
Plus: accrued interest			42,656,852	
Notes payable to contractors[3]			1,021,203	
Total principal and interest			2,258,727,317	
Less: short-term maturities			347,755,237	
Current portion of notes payable to contractors[3]			685,178	

	2020			
	Rate of interest [1]	Maturity	Pesos	Foreign currency
Accrued interest			42,656,852	
Total short-term debt and current portion of long-term debt			391,097,267	
Long-term debt			**1,867,630,050**	

The following table presents the roll-forward of total debt of PEMEX for each of the year ended December 31, 2021 and 2020, which includes short and long-term debt:

	2021[i]	2020 [i]
Changes in total debt:		
At the beginning of the year	Ps. 2,258,727,317	Ps. 1,983,174,088
Loans obtained - financing institutions[ii]	1,652,151,747	1,292,197,518
Debt payments	(1,707,581,580)	(1,151,962,147)
Accrued interest[iii][iv]	162,903,771	144,207,950
Interest paid.....	(157,256,625)	(130,989,150)
Foreign exchange.....	40,751,264	122,099,058
At the end of the year.....	**Ps. 2,249,695,894**	**Ps. 2,258,727,317**

[i] These amounts include accounts payable by Financed Public Works Contracts ("FPWC") (formerly known as Multiple Services Contracts), which do not generate cash flows.

[ii] Petróleos Mexicanos implemented a factoring scheme to support its suppliers. Amounts for 2021 and 2020 totaled Ps. 15,934,904 and Ps. 4,067,650, respectively, which did not represent cash flows.

[iii] During 2021, includes awards amortization, fees and expenses related to the issuance of debt in the amount of Ps. 3,290,673 and Ps. (2,835,359), respectively and amortized cost of Ps. 6,226,947.

[iv] During 2020, includes premiums, awards and interests, fees and expenses related to the issuance of debt in the amount of Ps. (228,822) and Ps. 53,073, respectively, and amortized cost of Ps. 1,868,501.

	2022	2023	2024	2025	2026	2027 and thereafter	Total
Maturity of the total principal outstanding and accrued interest as of December 31, 2021, for each of the years ending December 31.	Ps.492,283,613	153,052,257	182,065,735	101,083,584	173,687,822	1,147,522,883	Ps. 2,249,695,894

[1] As of December 31, 2021 and 2020, interest rates were as follows: 3 month LIBOR of 0.20913% and 0.23838%, respectively; 6 month LIBOR of 0.33875% and 0.25763%, respectively; 12 month LIBOR of 0.58313% and 0.34188%, respectively; TIIE rate of 5.715% and 4.4842%, respectively, for 28 days; TIIE rate of 5.8550% and 4.4660%, respectively, for 91 days; and TIIE rate of 6.0200% and 4.3650%, respectively, for 182 days.

[2] Includes financing from foreign banks of Ps. 1,946,136,632 and Ps. 1,992,963,415, as of December 31, 2021 and 2020, respectively.

[3] The total amounts of notes payable to contractors as of December 31, 2021 and 2020, current and long-term, are as follows:

	2021	2020
Total notes payable to contractors [a] [b]	Ps. 428,799	Ps. 1,021,203
Less: current portion of notes payable to contractors	428,799	685,178
Notes payable to contractors (long-term).....	**Ps. —**	**Ps. 336,025**

[a] PEMEX has entered into FPWCs pursuant to which the hydrocarbons and construction in progress are property of Pemex Exploration and Production. Pursuant to the FPWC, the contractors manage the work in progress, classified as development, infrastructure and maintenance. As of December 31, 2021 PEMEX has no outstanding payment amount. As of December 31, 2020, PEMEX had an outstanding amount payable of Ps. 81,364, respectively.

(b) During 2007, Pemex Exploration and Production contracted for the purchase of a Floating Production Storage and Offloading ("FPSO") vessel. The investment in the vessel totaled U.S. $723,575. As of December 31, 2021 and 2020, the outstanding balances owed to the contractor were Ps. 445,299 (U.S. $21,437) and Ps. 939,839 (U.S. $47,112), respectively. In accordance with the contract, the estimated future payments are as follows:

Year	Pesos	U.S. Dollars
2022	Ps. 445,299	U. S. $ 21,437
Less accrued interest	16,500	802
Total	**Ps. 428,799**	**U. S. $ 20,635**

(4) As of December 31, 2021 and 2020, PEMEX used the following exchange rates to translate the outstanding balances in foreign currencies to pesos in the statement of financial position:

	2021	2020
U.S. dollar	Ps. 20.5835	Ps. 19.9487
Japanese yen	0.1789	0.1933
Pounds sterling	27.8834	27.2579
Euro	23.4086	24.4052
Swiss francs	22.5924	22.5720

NOTE 17. LEASES

PEMEX leases plants, transportation and storage equipment, port facilities, buildings and land. Leases generally run for a period of 1 to 20 years, in some cases with an option to renew the lease after that date. Some lease payments are renegotiated every five years to reflect that the rent payments are market compliant. Some of the leases provide for additional rental payments that are based on changes in local price indexes. For certain leases, PEMEX has restrictions to enter into a sublease agreement.

Plants, transport and storage equipment, port facilities, buildings and land leases were entered into in previous years as service, transportation and building leases.

PEMEX has rights of use assets for equipment whose contractual terms are from one to three years. These leases are short-term and / or low-value item leases. PEMEX has decided not to recognize the right-of-use assets and lease liabilities for these leases.

Lease information where PEMEX is a lessee is presented as follows:

i. Rights of use assets are as follow:

	Rights of use assets							
	Transportation and storage equipment	Plants	Drilling equipment	Rights of use	Port facilities	Buildings	Lands	Total
Balance as of January 1, 2020	**35,503,509**	**25,693,459**	**6,061,502**	**1,835,949**	**1,623,453**	**65,212**	**35,230**	**70,818,314**
Depreciation of the year	(4,868,961)	(1,869,775)	(122,874)	(84,399)	355,505	(17,567)	(2,951)	(6,611,022)
Cancellations	(5,476,350)	—	—	—	—	—	—	(5,476,350)
Additions	97,891	—	—	—	438,951	—	579	537,421
Currency translation effect	12,292	—	—	—	—	1,116	511	13,919
Impairment	—	—	—	(87,025)	—	—	—	(87,025)
Balance as of December 31, 2020	**25,268,381**	**23,823,684**	**5,938,628**	**1,664,525**	**2,417,909**	**48,761**	**33,369**	**59,195,257**
Depreciation of the year	(3,872,379)	(2,081,243)	(196,278)	(88,284)	(144,680)	(21,841)	(3,166)	(6,407,871)
Cancellations	(2,866,335)	(435,062)	—	—	—	—	—	(3,301,397)
Additions	2,119,878	2,419,911	—	—	82,388	35,157	616	4,657,950
Currency translation effect	18,381	—	—	—	33,020	401	692	52,494
Impairment	—	—	—	87,025	—	—	—	87,025
Balance as of December 31, 2021	**20,667,926**	**23,727,290**	**5,742,350**	**1,663,266**	**2,388,637**	**62,478**	**31,511**	**54,283,458**
Estimated useful life	1 to 10 years	14 years	10 years	23 years	20 years	1to 5 years	5 years	

ii. Leases liabilities are as follows:

		2021	2020
Lease liabilities recognized at January 1	Ps.	63,184,128	68,148,627
Additions		4,657,950	625,410
Cancellations		(3,734,303)	(6,578,337)
Payments of principal		(7,622,403)	(7,979,972)
Accrued interest		4,773,883	5,398,964
Interests paid		(3,646,028)	(2,030,829)
Foreign Exchange		1,738,422	5,600,265
Lease liabilities at December 31,	**Ps.**	**59,351,649**	**63,184,128**

The obligation recognized as of December 31, 2021 and 2020, amounted to Ps. 59,351,649 and Ps. 63,184,128, of which Ps. 7,902,874 and Ps. 8,106,937 were recognized in current liabilities and Ps. 51,448,775 and Ps. 55,077,191 in non-current liabilities, respectively.

iii. Amounts recognized in the statement of comprehensive Income

		2021		2020
Depreciation of rights of use	Ps.	6,407,871	Ps.	7,229,231
Interests from lease liabilities		4,985,566		5,784,476
Expenses related to short-term leases		105,789		7,631

iv. Amounts recognized in the statement of cash flows

		2021		2020
Lease payments (principal and interest)	Ps.	(11,268,431)	Ps.	(10,010,801)

NOTE 18. DERIVATIVE FINANCIAL INSTRUMENTS

PEMEX faces market risk caused by the volatility of hydrocarbon prices, exchange rates and interest rates, credit risk associated with investments and financial derivatives, as well as liquidity risk. In order to monitor and manage these risks, PEMEX has approved general provisions relating to financial risk management, which are comprised of policies and guidelines that promote an integrated framework for risk management, regulate the use of DFIs, and guide the development of risk mitigation strategies.

This regulatory framework establishes that DFIs should be used only for the purpose of mitigating financial risk. The use of DFIs for any other purpose must be approved in accordance with PEMEX's current internal regulation. PEMEX has a Financial Risk Working Group (FRWG) which is a specialized working group with decision-making authority on financial risk exposure, financial risk mitigation schemes, and DFIs trading of Petróleos Mexicanos, the subsidiary entities, and where applicable, the subsidiary companies.

Approved DFIs are mainly traded on the OTC (Over the Counter) market; however, exchange traded instruments may also be used. In the case of PMI Trading, DFIs are traded on CME-Clearport.

The different types of DFIs that PEMEX trades are described below in the subsections corresponding to each risk type and as related to the applicable trading markets.

One of PEMEX's policies is to contribute to minimizing the impact that unfavorable changes in financial risk factors have on its financial results by promoting an adequate balance between incoming cash flows from operations and outgoing cash flows related to its liabilities.

As part of the regulatory framework for financial risk management, PEMEX has established the eligible counterparties with which it may trade DFIs and other financial instruments.

In addition, certain PMI Subsidiaries have implemented a regulatory framework for risk management with respect to its activities, which consists of policies, guidelines and procedures to manage the market risk associated with its commodity trading activities in accordance with industry best practices, such as: 1) the use of DFIs for financial risk mitigation purposes; 2) the segregation of duties;

3) valuation and monitoring mechanisms, such as the generation of a daily portfolio risk report, value at risk ("VaR") computation; and 4) VaR limits, both at a global and business unit level and the implementation of stop loss mechanisms.

Given that PEMEX's outstanding DFIs have been entered into for risk mitigation purposes, particularly with economic hedging purposes, there is no need to establish and monitor market risk limits.

For those portfolios with an open market risk exposure, PEMEX's financial risk management regulatory framework establishes the implementation and monitoring of market risk metrics and limits (such as VaR, among others).

PEMEX has also established credit guidelines for DFIs that Pemex Industrial Transformation offers to its domestic customers, which include the use of guarantees and credit lines. For exchange traded DFIs PEMEX trades under the margin requirements of the corresponding exchange market, and therefore does not have internal policies for these DFIs.

DFIs held with financial counterparties do not require collateral exchange clauses. Notwithstanding, PEMEX's regulatory framework promotes credit risk mitigation strategies such as collateral exchange.

PEMEX does not have an independent third party to verify compliance with these internal standards; however, PEMEX has internal control procedures that certify compliance with existing policies and guidelines.

A. Risk Management

I. Market Risk

i. Interest rate risk

PEMEX is exposed to fluctuations in floating interest rate liabilities. PEMEX is exposed to U.S. dollar LIBOR and to Mexican peso TIIE. As of December 31, 2021, 19.2% of PEMEX's total net debt outstanding (including DFIs) consisted of floating rate debt.

Occasionally, for strategic reasons or in order to offset the expected inflows and outflows, PEMEX has entered into interest rate swaps and options. Through the swap agreements, PEMEX acquires the obligation to make payments based on a fixed interest rate in exchange for receiving payments referenced to a floating interest rate. On the other hand, under the option agreements, PEMEX acquires protection against possible raises in the floating interest rates of some of its liabilities.

As of December 31, 2021, Petróleos Mexicanos was a party to four interest rate swap agreements denominated in U.S. dollars for an aggregate notional amount of U.S. $733,750 at a weighted average fixed interest rate of 2.34% and a weighted average term of 3.4 years.

Similarly, in order to eliminate the volatility associated with variable interest rates of long-term financing operations, PMI NASA has also executed three interest rate swap agreements denominated in U.S. dollars for an aggregate notional amount of U.S. $9,844, at a weighted average fixed interest rate of 3.80% and a weighted average term of 0.76 years.

Moreover, PEMEX invests in pesos and U.S. dollars in compliance with applicable internal regulations, through portfolios that have different purposes that seek an adequate return subject to risk parameters that reduce the probability of capital losses. The objective of the investments made through these portfolios is to meet PEMEX's obligations payable in pesos and U.S. dollars.

The investments made through PEMEX's portfolios are exposed to domestic and international interest rate risk and credit spread risk derived from government and corporate securities, and inflation risk arising from the relationship between UDIs and pesos. However, these risks are mitigated by established limits on exposure to market risk.

IBOR reference rates transition

As a result of the decision made by the Financial Stability Board (FSB), the Interbank Offered Rates (IBORs), such as the LIBOR in dollars (over-night "O/N", one week "1W", two months "2M", and twelve months "12M") or the EURIBOR in Euros, are expected to cease to be published in 2022 and are expected to be replaced by alternative reference rates, based on risk-free rates obtained from market operations.

The discontinuation of the publication of these rates was originally scheduled for December 2021. Nevertheless, on November 2020, the ICE Benchmark Administration Limited (known as "ICE") announced an extension until June 2023 for the publication of the most common LIBOR rates in dollars (over-night "O/N", one month "1M", three months "3M", six months "6M" and twelve months.

Therefore, PEMEX has identified and is reviewing contracts expiring after the applicable discontinuation dates, that could be impacted by the change in the aforementioned rates.

PEMEX has a reduced number of financial instruments referenced to floating rates in Euros and U.S. dollars with maturity and interest rate fixation after December 2021 and June 2023, respectively. This portfolio of financial instruments is composed of debt instruments and DFIs as shown below:

	Reference Rate	**Notional Amount As of December 31, 2021 (in thousands of each currency)*
Debt	LIBOR 1M USD	3,212,394
	LIBOR 3M USD	510,390
	LIBOR 6M USD	823,658
	EURIBOR 3M EUR	650,000
DFI	LIBOR 1M USD	2,500,000
	LIBOR 3M USD	156,250
	LIBOR 6M USD	243,750

* Note: Notional amounts with maturity after December 31, 2021, for Euros and after June 30, 2023, for U.S. dollars.

As of December 31, 2021, there was no effect on the debt and on the DFIs contracted to cover the discontinuation of the Euribor reference rate, given that the rate set for the coupons to be paid, in the debt and in DFIs, is the same.

In the event that TIIE ceases to be published, the portfolio of financial instruments referenced to these floating rates is composed of debt instruments and DFIs as shown below:

	Reference Rate	**Notional Amount As of December 31, 2021 (in millions of each currency)*
Debt	TIIE 28D MXN	6,114,905
	TIIE 91D MXN	24,756,098
DFI	TIIE 28D MXN	30,513,214

* Note: Notional amounts with maturity after December 31, 2021.

PEMEX's portfolio also consists of additional debt instruments and DFIs referenced at fixed rates, which are not listed in the tables above since PEMEX's fixed rate portfolio will not be impacted by the IBOR transition.

Currently, PEMEX has been in constant communication with its counterparties, in order to carry out this transition in the most efficient way possible. In addition, as a result of the transition, PEMEX is working on any amendments to its contracts that may be required and is monitoring the evolution of the IBORs transition in the market, in order to anticipate any negative impact that these changes may have.

As of the fourth quarter of 2021, derived from the transition to the alternative reference rates based on risk-free rates (RFR), PEMEX has adopted the policy of not entering into new DFIs referenced to IBOR rates. Additionally, some of the discount curves that PEMEX uses to obtain the fair value of its DFIs already include on their construction instruments of the corresponding currency referenced to the new RFR.

As a result of PEMEX's policy of not contracting new financing operations at floating rates linked to IBOR, during 2021, PEMEX contracted financing operations in USD at floating rates, linked to RFR rates.

The credit agreements of PMI Trading include flexible provisions that help realize an orderly transition to an alternative rate in the event that the LIBOR rates ceased to be published. Currently, PMI Trading's negotiations to adopt the new benchmark rate have concluded and PMI Trading has agreed to the new benchmark of Secured Overnight Funding Rate (SOFR) once LIBOR ceases to be available.

ii. Exchange rate risk

Most of PEMEX's revenues are denominated in U.S. dollars, a significant amount of which is derived from exports of crude oil and petroleum products, which are priced and payable in U.S. dollars. Additionally, PEMEX's revenues from

domestic sales of gasoline and diesel net of IEPS Tax, tax duties, incentives, and other related taxes, as well as domestic sales of natural gas and its byproducts, LPG and petrochemicals, are referenced to international U.S. dollar-denominated prices.

PEMEX's expenses related to hydrocarbon duties are calculated based on international U.S. dollar-denominated prices and the cost of hydrocarbon imports that PEMEX acquires for resale in Mexico or use in its facilities are indexed to international U.S. dollar-denominated prices. By contrast, PEMEX's capital expenditure and operating expenses are established in pesos.

As a result of this cash flow structure, the depreciation of the peso against the U.S. dollar increases PEMEX's financial balance. The appreciation of the peso relative to the U.S. dollar has the opposite effect. PEMEX manages this risk without the need for hedging instruments, because the impact on PEMEX's revenues of fluctuations in the exchange rate between the U.S. dollar and the peso is offset in whole or in part by its impact on its obligations.

PEMEX prioritizes debt issuances denominated in U.S. dollars; nonetheless, this is not always achievable, hence non-U.S. dollar denominated debt issued in international currencies is hedged through DFIs to mitigate their exchange rate exposure, either by swapping it into U.S. dollars or through other derivative structures. The rest of the debt is denominated in pesos or in UDIs, and for the debt denominated in UDIs, it has been converted into pesos through DFIs in order to eliminate the inflationary risk exposure.

As a consequence of the above, PEMEX's debt issued in international currencies other than U.S. dollars has exchange rate risk mitigation strategies. PEMEX has selected strategies that further seek to reduce its cost of funding by leaving, in some cases, part of this exchange rate exposure unhedged when assessed as appropriate.

The underlying currencies of PEMEX's DFIs are the euro, Swiss franc, Japanese yen and pounds sterling against the U.S. dollar and UDIs against the peso.

As of December 31, 2021, PEMEX did not enter into any DFIs, since no debt in currencies other than U.S. dollars or pesos was issued.

Nonetheless, during 2021 PEMEX carried out the restructure of five cross-currency swaps, two of them with a recouponing clause. These DFIs hedged the exchange rate exposure of a €1,000,000 debt with maturity in 2026, a €100,000 debt with maturity in 2030 and the 10% of a €1,250,000 debt with maturity in 2027. For this restructure PEMEX entered into, without cost, structures which are composed of a cross-currency swap and the sale of a call option, guaranteeing complete protection up to a certain exchange rate and partial protection above that level. These DFIs maintained the original contractual clauses. Once this restructure had been carried out, 25% of the issue with maturity in 2026 remained hedged with two cross-currency swaps.

Additionally, during 2020, PEMEX carried out the restructure of three cross-currency swaps, one of which had a recouponing provision. These DFIs hedged the exchange rate exposure of a €1,250,000 debt with maturity in 2027. For this restructuring, PEMEX entered into, without cost, structures which are composed of a cross-currency swap and the sale of a call option, guaranteeing complete protection up to a certain exchange rate and partial protection above that level. This allowed PEMEX to eliminate the recouponing provision without cost.

During 2019, PEMEX restructured a cross-currency swap which had a recouponing provision. This DFI hedged the exchange rate exposure of a €725,000 debt with maturity in 2025. For this restructure PEMEX entered into, without cost, three options structures called "Seagull Options" to hedge the same notional risk as the original swap. These structures protect the short exposure in euros against an appreciation of the euro versus the U.S. dollar in a specific range and result in a benefit if the euro depreciates up to a certain exchange rate. Additionally, in order to mitigate the exchange rate risk derived from the coupons, PEMEX entered into only coupon swaps for the same notional amount. These allowed PEMEX to eliminate the recouponing provision without cost.

PEMEX recorded a total net foreign exchange (loss) gain of Ps. (45,675,050), Ps. (128,949,304) and Ps. 86,930,388, for the years ended December 31, 2021, 2020 and 2019, respectively; these amounts include the unrealized foreign exchange gain (loss) associated with debt of Ps. (40,751,264), Ps. (122,099,058) and Ps. 75,967,395 for the years ended December 31, 2021, 2020 and 2019, respectively. Unrealized foreign exchange gains and losses do not impact PEMEX's cash flows. The depreciation of the peso during 2021 caused a total net foreign exchange loss because a significant part of PEMEX's debt, 87.19% (principal only) as of December 31, 2021, is denominated in foreign currency. Due to the cash flow structure described above, the depreciation of the peso relative to the U.S. dollar does not affect PEMEX's ability to meet U.S. dollar-denominated financial obligations and it improves PEMEX's ability to meet peso-denominated financial obligations. On the other hand, the appreciation of the peso relative to the U.S. dollar may increase PEMEX's peso-denominated debt service costs on a U.S. dollar basis.

Certain of the PMI Subsidiaries face market risks generated by fluctuations in foreign exchange rates. In order to mitigate these risks, the boards of directors of several of these companies have authorized a policy which stipulates that

financial assets must be denominated in its functional currency, unless the company owes a duty or expected payment in a currency other than its functional one.

Finally, a significant amount of PMI Trading's income and expenses, including the cost of sales and related sales costs, is derived from the trade of refined products, petrochemicals and gas liquids to PEMEX subsidiaries and third parties, whose prices are determined and are payable in U.S. dollars. PMI Trading's exposure to foreign currency risk results primarily from the need to fund tax payments denominated in domestic currency, as well as from certain related sales costs denominated in domestic currency.

PMI Trading believes it can adequately manage the risk created by the payment of taxes in domestic currency without the need to enter into hedging instruments because the exposure to this risk is marginal relative to the total flows of U.S. dollar. In addition, in the event that a potential foreign exchange risk arises in connection with a commercial transaction, PMI Trading may implement risk mitigation measures by entering into DFIs.

iii. Hydrocarbon Price Risk

PEMEX periodically assesses its revenues and expenditures structure in order to identify the main market risk factors that PEMEX's cash flows are exposed to in connection with international hydrocarbon prices. Based on this assessment, PEMEX monitors its exposure to the most significant risk factors and quantifies their impact on PEMEX's financial balance.

PEMEX's exports and domestic sales are directly or indirectly related to international hydrocarbon prices. Therefore, PEMEX is exposed to fluctuations in these prices. In terms of crude oil and natural gas, part of this risk is transferred to the Mexican Government under PEMEX's current fiscal regime.

PEMEX's exposure to hydrocarbon prices is partly mitigated by natural hedges between its inflows and outflows.

Additionally, PEMEX continuously evaluates the implementation of risk mitigation strategies, including those involving the use of DFIs, taking into consideration their operative and budgetary feasibility.

In 2017, the Board of Directors of Petróleos Mexicanos approved the establishment of an Annual Oil Hedging Program. Since then, PEMEX has implemented hedging strategies to partially protect its cash flows from falls in the Mexican crude oil basket price below the one established in the Federal Revenue Law.

During 2019, PEMEX entered into a crude oil hedge for fiscal year 2020, pursuant to which PEMEX hedged 243 thousand barrels per day for the period between December 2019 and December 2020, for U.S. $178,268.

Afterwards, during 2020 PEMEX entered into a crude oil hedge for the first half of fiscal year 2021, pursuant to which PEMEX hedged 332.5 thousand barrels per day for the period between December 2020 and June 2021, for U.S. $119,920.

During the first half of 2021 PEMEX entered into a crude oil hedge for the second half of fiscal year 2021, pursuant to which PEMEX hedged 218 thousand barrels per day on average, for the period between July 2021 and December 2021, for U.S. $39,401.

Finally, during the second half of 2021 PEMEX began with the crude oil hedge for the fiscal year 2022. As of December 31, 2021, PEMEX had hedged 155 thousand barrels per day for the period between January 2022 and December 2022, for U.S. $95,215, which represents 53% of the crude oil hedge for the fiscal year 2022.

In addition to supplying natural gas, Pemex Industrial Transformation can offer DFIs to its domestic customers in order to provide them with support to mitigate the risk associated with the volatility of natural gas prices.

Since 2017, when this service is offered, Pemex Industrial Transformation must enter into DFIs with Petróleos Mexicanos under the opposite position to those DFIs offered to its customers in order to mitigate the market risk it would bear under such offered DFIs. Petróleos Mexicanos then transfers the related price risk derived from the DFI position held with Pemex Industrial Transformation to financial counterparties by entering into the opposite position DFIs with such parties. As of December 31, 2021, there were no DFIs since all the DFIs in its portfolios expired in 2019. In case of entering into new trades, Pemex Industrial Transformation DFI portfolios have VaR and CaR limits in order to limit market risk exposure.

PMI Trading faces market risk generated by the terms of the purchase and sale of refined products and natural gas liquids, as well as the volatility of oil prices. Accordingly, it frequently enters into DFIs in order to mitigate this risk, thereby reducing the volatility of its financial results.

In accordance with the risk management regulatory framework that PMI Trading has implemented, VaR and the change in profit and loss by portfolio are calculated daily and compared to the maximum applicable limits in order to implement risk mitigation mechanisms as necessary.

iv. Market risk quantification

The quantification of market risk exposure in PEMEX's financial instruments is presented below, in accordance with the applicable international risk management practices.

Interest rate risk quantification

The quantification of interest rate risk of investment portfolios is carried out by using the one-day horizon historical VaR, with a confidence level of 95%, over a period of one year. The VaR incorporates interest rate and spread risks. In addition, for portfolios in domestic currency, the VaR includes the inflation risk embedded in securities denominated in UDI. For portfolio management purposes, interest rate risk is mitigated by VaR limits.

As of December 31, 2021, the VaRs of PEMEX's investment portfolios were Ps. (7.21) for the Peso Treasury Portfolio, Ps. 0.00 for FOLAPE, and U.S. $0.00 for the U.S. Dollar Treasury Portfolio.

Additionally, PEMEX has a portfolio of Mexican Government bonds. It is considered that these securities are not exposed to market risk, unlike the investment portfolios' securities. Therefore, there is no need to calculate a VaR.

In addition to the exposure to interest rate fluctuations of the DFIs in which PEMEX is obligated to make payments referenced to floating rates, PEMEX's DFIs are exposed to Mark-to-Market ("MtM") volatility as a result of changes in the interest rate curves used in their valuation.

Interest rate risk quantification was calculated for DFIs in conjunction with the interest rate risk quantification for the debt portfolio. The following table shows the sensitivity of PEMEX's DFIs and debt portfolio to a parallel shift of 10 basis points (bp) over the zero coupon rate curves. The 10bp parallel shift may be used to estimate in a simple manner the impact for proportional values to this shift and was selected in accordance with market practices for financial risk management.

For the debt portfolio, interest rate risk sensitivity was calculated taking into account both the DFI interbank market yield curves and the PEMEX curves (which were also used to estimate the debt portfolios' fair value). These metrics were calculated solely for informational purposes and are not used for portfolio management purposes because PEMEX does not intend to prepay its debt or terminate its DFIs early. Therefore, there is no interest rate risk arising from fixed rate obligations.

INTEREST RATE and CURRENCY DFIs

Interest rate sensitivity to + 10 bp

	Interbank Yield Curves			PEMEX Curves
Currency	**Sensitivity debt**	**Sensitivity DFIs**	**Sensitivity net**	**Sensitivity debt**
CHF	U.S. $ 813	(791)	22	774
Euro	51,546	(44,080)	7,466	40,694
Pound Sterling	2,704	(2,623)	81	2,425
Yen	3,830	(1,612)	2,218	3,319
Peso	20,545	521	21,066	19,391
UDI	10,874	(10,874)	0	9,096
U.S. dollar	1,189,157	176,157	1,365,314	418,921

In thousand of U.S. dollars

Figures not audited

In addition, PEMEX performed a retrospective sensitivity analysis of the impact on its financial statements for the years ended December 31, 2021, 2020 and 2019, in which PEMEX assumed either an increase or decrease of 25 basis points in the floating interest rates of its debt and corresponding hedges.

At December 31, 2021, 2020 and 2019, had market interest rates been 25 basis points higher, with all other variables remaining constant, net loss for the year would have been Ps. 895,382, Ps. 606,839 and Ps. 644,506 higher for December 31, 2021, 2020 and 2019, respectively, primarily as a result of an increase in interest expense. Conversely, had market interest rates been 25 basis points lower, net loss for the year would have been Ps. 895,382, Ps. 606,839 and Ps. 644,506 lower at December 31, 2021, 2020 and 2019, respectively, primarily as a result of a decrease in interest expense.

Exchange rate risk quantification

The investments of PEMEX's portfolios do not face foreign exchange rate risk because the funds of such portfolios are used to meet obligations in pesos and U.S. dollars.

Currency DFIs are entered into in order to hedge exchange rate risk arising from debt flows in currencies other than pesos and U.S. dollars or inflation risk arising from debt flows in UDIs. However, due to the accounting treatment, net income is exposed to MtM volatility, mainly as a result of changes in the exchange rates used in their valuation.

Exchange rate risk quantification was calculated for DFIs in conjunction with the exchange rate risk quantification for the debt portfolio. The following table shows the sensitivity of PEMEX's DFIs and debt portfolio to an increase of 1% to the exchange rates of currencies against the U.S. dollar. The 1% may be used to estimate in a simple manner the impact for proportional values to this increase and was selected in accordance with market practices for financial risk management.

For the debt portfolio, exchange rate risk sensitivity was calculated taking into account both, interbank market yield curves and the PEMEX curves. In addition, the table shows the one-day horizon historical VaR of the remaining open position, with a confidence level of 95%, over a period of one year. These metrics were calculated solely for informational purposes. Nevertheless, in order to carry out management activities related to its debt portfolio, PEMEX periodically conducts quantitative analyses in order to estimate the exchange rate risk exposure generated by its debt issuances. Based on these analyses, PEMEX has elected to enter into DFIs as an exchange rate risk mitigation strategy. These DFIs along with the debt that they hedge are shown in the following table:

INTEREST RATE and CURRENCY DFIs

Exchange rate sensitivity +1% and VaR 95%

Currency	Interbank Yield Curves Sensitivity Debt	Interbank Yield Curves Sensitivity DFIs	Interbank Yield Curves Sensitivity Net	VaR 95% Net	PEMEX Curves Sensitivity Debt
CHF	U.S. $ (4,194)	4,190	(4)	(3)	(4,034)
Euro	(153,040)	114,808	(38,232)	(19,345)	(134,172)
Pound Sterling	(11,838)	11,824	(14)	(9)	(11,175)
Yen	(10,030)	2,649	(7,382)	(3,654)	(8,966)
Peso	(140,177)	(16,013)	(156,190)	(165,454)	(136,646)
UDI	(19,183)	19,183	(0)	(0)	(17,144)

In thousand of U.S. dollars
Figures not audited

As shown in the table above, exchange rate risk derived from debt denominated in currencies other than pesos and U.S. dollars is almost fully hedged by DFIs. The exchange rate risk exposure to the Swiss franc, euro, pound sterling and Japanese yen is a result of the delta of the structures described above (Seagull Options and Calls), and considering the current exchange rate levels, represents a lower funding cost than the hedging strategies carried out through swaps.

In addition, PEMEX performed a retrospective sensitivity analysis of the impact on its financial statements of the years ended December 31, 2021, 2020 and 2019, in which PEMEX assumed either an increase or decrease of 10% in the exchange rate between the U.S. dollar and peso in order to determine the impact on net income and equity as a result of applying these new rates to the monthly balances of assets and liabilities denominated in U.S. dollars.

At December 31, 2021, 2020 and 2019, had the peso depreciated against the U.S. dollar by 10% with other variables remaining constant, net income would have been Ps. 172,056,924, Ps. 168,334,391 and Ps. 180,408,000 lower, respectively, primarily as a result of an increase in the exchange rate losses. However, had the peso appreciated against the U.S. dollar by 10%, net income for the period would have increased by Ps. 172,056,924, Ps. 168,334,391 and Ps. 180,408,000, respectively, primarily as a result of the decrease in exchange rate losses.

Hydrocarbon price risk quantification

Pemex Industrial Transformation occasionally faces market risk due to open positions arising from the mismatch between the DFI portfolio offered to domestic customers and hedges with international counterparties. As of December 31, 2021, Pemex Industrial Transformation's natural gas DFI portfolios had no market risk exposure since all the DFIs in its portfolios expired in 2019.

Open market risk exposure would be measured using the 20-day Delta-Gamma VaR methodology, with a confidence level of 95%, based on 500 daily observations; VaR and CaR would be monitored and mitigated by pre-established limits.

It should be noted that sensitivity analyses were not carried out for other financial instruments, such as accounts receivable and payable (as defined in the financial reporting standards). Such accounts are cleared in short-term, and therefore market risk is considered to be nonexistent. Most of these accounts are related to hydrocarbon prices.

In accordance with the risk management regulatory framework that PMI Trading has implemented, VaR and the change in profit and loss by portfolio are calculated daily and compared to the maximum applicable limits in order to implement risk mitigation mechanisms as necessary.

PMI Trading's global VaR associated with commodities market risk was U.S. $(4,616) as of December 31, 2021. This VaR was calculated using the historical method with a 95% confidence level, two-year history and a one-day horizon. The minimum VaR recorded on the year was U.S. $(2,545) (registered on September 1, 2021) and the maximum VaR recorded on the year was U.S. $(31,184) (registered on March 11, 2021). As of December 31, 2020, the global VaR 99% was U.S. $(17,102).

The quantification of crude oil price risk is carried out by using the one-day horizon historical VaR, with a confidence level of 95%, over a period of one year. As of December 31, 2021, this was U.S. $ (7,059).

II. Credit Risk

When the fair value of a DFI is favorable to PEMEX, PEMEX faces the risk that the counterparty will not be able to meet its obligations. PEMEX monitors its counterparties' creditworthiness and calculates the credit risk exposure for its DFIs. As a risk mitigation strategy, PEMEX only enters into DFIs with major financial institutions with a minimum credit rating of BBB-. These ratings are issued and revised periodically by risk rating agencies. Furthermore, PEMEX seeks to maintain a diversified portfolio of counterparties.

In order to estimate PEMEX's credit risk exposure to each financial counterparty, the potential future exposure is calculated by projecting the risk factors used in the valuation of each DFI in order to estimate the MtM value for different periods, taking into account any credit risk mitigation provisions.

Moreover, PEMEX has entered into various long-term cross-currency swaps agreements with "recouponing" provisions (pursuant to which the payments on the swaps are adjusted when the MtM exceeds the relevant threshold specified in the swap), thereby limiting the exposure to its counterparties to a specific threshold amount, as well as the counterparties' exposure to PEMEX. The specified thresholds were reached in one cross-currency swap during 2021, which was used to hedge the exchange rate exposure to the pounds sterling, and in five cross-currency swaps during 2020, which were used to hedge the exchange rate exposure to the euro and to the pounds sterling.

This resulted in the cash settlement of such swaps and the resetting of swap terms to return their MtM value to zero. During 2021, PEMEX did not enter into any new cross-currency swap with these characteristics.

According to IFRS 13 "Fair Value Measurement," the fair value or MtM value of DFIs must reflect the creditworthiness of the parties. Consequently, the fair value of a DFI takes into account the risk that either party may default on its obligation. Due to the above, PEMEX applies the credit value adjustment ("CVA") method to calculate the fair value of its DFIs.

For each DFI, the CVA is calculated by determining the difference between the MtM and the estimated MtM adjusted for credit risk. In determining the credit risk, the CVA method takes into account the current market perception about the credit risk of both counterparties, using the following inputs: a) the MtM projection for each payment date based on forward yield curves; b) the implied default probability obtained from both, PEMEX and the counterparty's credit default swaps, at each payment date; and c) the default recovery rates of each counterparty.

The current and potential exposures, aggregated by credit rating, are as follows:

Maximum Credit Exposure by term in Petróleos Mexicanos

Rating	Current	Less than 1 year	1-3 years	3-5 years	5-7 years	7-10 years	More than 10 years
A+	U.S. $ (50,286)	365,386	301,560	263,319	130,333	—	—
A	(32,117)	126,649	193,630	55,216	66,688	—	—
A-	(81,618)	296,778	211,254	102,940	130,962	—	—
BBB+	108,122	477,202	545,991	603,062	358,306	122,984	162,275
BBB	59,253	403,553	642,187	721,421	442,023	263,718	298,349
BBB-	(66,883)	69,715	147,830	124,427	161,519	—	—

in thousand of U.S. dollars

Figures not audited

Maximum Credit Exposure by term in Petróleos Mexicanos including debt

Rating	Current	Less than 1 year	1-3 years	3-5 years	5-7 years	7-10 years	More than 10 years
A+	—	—	—	263,319	130,333	—	—
A	—	—	—	55,216	66,688	—	—
A-	—	44,932	83,274	102,940	130,962	—	—
BBB+	—	73,899	54,272	511,591	358,306	122,984	162,275
BBB	—	—	23,756	629,949	442,023	263,718	298,349
BBB-	—	69,715	147,830	124,427	161,519	—	—

in thousand of U.S. dollars

Figures not audited

PEMEX also faces credit risk derived from its investments. As of December 31, 2021, the position in domestic currency was in Mexican Government bonds in pesos. Given the current credit rating, the default probability in this currency is zero according to the default's frequency matrices from rating agencies, therefore no quantification or disclosure of this exposure is made.

Furthermore, by means of its credit guidelines for DFI operations, Pemex Industrial Transformation significantly reduces its credit risk exposure related to the DFIs.

In order to qualify for these DFIs, Pemex Industrial Transformation's customers must be party to a current natural gas supply contract and sign a domestic master derivative agreement.

Additionally, according to the credit guidelines, DFIs with these customers must be initially secured by cash deposits, letters of credit or other collateral provisions, as required. The credit guidelines indicate that Pemex Industrial Transformation may offer DFIs with an exemption from collateral requirements up to a certain amount, through a credit line approved by the credit committee, based on an internal financial and credit assessment. Moreover, if the credit line is insufficient to cover each client's exposure, the client is obligated to deposit collateral.

In accordance with these guidelines, in the event that a client does not meet its payment obligations, DFIs related to this client would be terminated, rights to any available collateral would be exercised and, if the collateral were insufficient to cover the fair value, or in the absence of collateral, natural gas supply would be suspended until the payment is made.

As of December 31, 2021, Pemex Industrial Transformation had no DFIs since all the DFIs of its portfolios expired in 2019. As such, once the total settlement of the operations was carried out, the exempt credit lines expired, and the guarantees deposited by the clients were entirely returned.

PMI Trading's credit risk associated with DFI transactions is mitigated through the use of futures and standardized instruments that are cleared through CME-Clearport.

III. Liquidity Risk

PEMEX's main internal source of liquidity comes from its operations. Additionally, through its debt planning and the purchase and sale of U.S. dollars, PEMEX currently preserves a cash balance at a level of liquidity in domestic currency and U.S. dollars that is considered adequate to cover its investment and operating expenses, as well as other payment obligations, such as those related to DFIs.

In addition, as of December 31, 2021, Petróleos Mexicanos has acquired committed revolving credit lines in order to mitigate liquidity risk, two of which provide access to Ps. 28,000,000 and Ps. 9,000,000 with expiration dates in November 2022 and November 2023, respectively; and another that provides access to U.S. $5,500,000 with expiration date in June 2024. As of December 31, 2021, these credit lines are fully used (see Note 16).

During 2021, PEMEX entered into FX Forwards MXN/USD in order to preserve an adequate level of liquidity in U.S. dollars. As of December 31, 2021, the aggregate notional amount of these DFIs was U.S. $600,000.

Finally, the investment strategies of PEMEX's portfolios are structured by selecting time horizons that consider each currency's cash flow requirements in order to preserve liquidity.

Certain PMI Subsidiaries mitigate their liquidity risk through several mechanisms, the most important of which is its centralized treasury, which provides access to two syndicated credit facilities for up to U.S. $664,000 and U.S. $1,500,000, respectively (the latter was transferred from Petróleos Mexicanos to PMI during December 2020) and cash surplus capacity in the custody of the centralized structure. In addition, certain PMI Subsidiaries have access to bilateral credit lines from financial institutions for up to U.S. $180,000.

These companies monitor their cash flow on a daily basis and protect their creditworthiness in the financial markets. Liquidity risk is mitigated by monitoring certain financial ratios as set forth in the policies approved by each company's board of directors.

The following tables show the cash flow maturities as well as the fair value of PEMEX's debt and DFI portfolios as of December 31, 2021, and 2020. It should be noted that:

- For debt obligations, these tables present principal cash flow and the weighted average interest rates for fixed rate debt.
- For interest rate swaps, interest rate options, cross-currency swaps and currency options, these tables present notional amounts and weighted average interest rates by expected (contractual) maturity dates.
- Weighted average variable rates are based on implied forward rates obtained from the interbank market yield curve at the reporting date.
- For crude oil, volumes are presented in millions of barrels, and fixed average and strike prices are presented in U.S. dollars per barrel.
- DFIs' fair value includes CVA and is calculated based on market quotes obtained from market sources such as Bloomberg, *Proveedor Integral de Precios, S.A. de C.V.* ("PIP"), among others.
- For PMI Trading, the prices used in commercial transactions and DFIs are published by reputable sources that are widely used in international markets, such as CME-NYMEX, Platts and Argus, among others.
- Fair value is calculated internally, either by discounting cash flows with the corresponding zero-coupon yield curve in the original currency, or through other standard methodologies commonly used in financial markets for specific instruments.
- For all instruments, the tables are based on the contract terms in order to determine the future cash flows that are categorized by expected maturity dates.

Quantitative Disclosure of Debt Cash Flow Maturities as of December 31, 2021[1][2]

	Year of expected maturity date							
	2022	2023	2024	2025	2026	2027 Thereafter	Total Carrying Value	Fair Value
Liabilities								
Outstanding debt								
Fixed rate (U.S. dollars)	Ps. 37,913,852	Ps. 50,307,730	Ps. 23,079,032	Ps. 36,124,005	Ps. 78,925,073	Ps. 1,032,384,964	Ps. 1,258,734,656	Ps 1,294,291,227
Average interest rate (%)	—	—	—	—	—	—	6.48%	
Fixed rate (Japanese yen)	—	5,367,000	—	—	14,296,527	—	19,663,527	18,454,292
Average interest rate (%)	—	—	—	—	—	—	1.35%	
Fixed rate (pounds sterling)	9,753,906	—	—	12,508,863	—	—	22,262,769	23,002,138
Average interest rate (%)	—	—	—	—	—	—	5.72%	
Fixed rate (pesos)	85,401,120	—	57,280,273	—	31,048,584	—	173,729,977	171,407,986
Average interest rate (%)	—	—	—	—	—	—	7.89%	
Fixed rate (UDIs)	—	—	—	—	22,428,519	13,026,170	35,454,688	35,287,367
Average interest rate (%)	—	—	—	—	—	—	4.09%	
Fixed rate (euros)	37,384,961	32,746,388	29,205,234	38,593,629	23,400,183	89,686,575	251,016,970	260,931,866
Average interest rate (%)	—	—	—	—	—	—	3.98%	
Fixed rate (Swiss francs)	—	8,240,281	—	—	—	—	8,240,281	8,302,575
Average interest rate (%)	—	—	—	—	—	—	1.75%	
Fixed rate (Australian dollars)	—	—	—	—	—	—	—	—
Average interest rate (%)	—	—	—	—	—	—	—	
Total fixed rate debt	**170,453,838**	**96,661,399**	**109,564,539**	**87,226,497**	**170,098,886**	**1,135,097,709**	**1,769,102,868**	**1,811,677,451**
Variable rate (U.S. dollars)	200,020,654	34,147,302	61,710,357	6,949,574	3,382,861	12,306,214	318,516,962	274,925,000
Variable rate (Japanese yen)	—	—	—	—	—	—	—	—
Variable rate (euros)	—	15,214,474	—	—	—	—	15,214,474	15,241,361
Variable rate (pesos)	84,470,650	7,029,082	10,790,839	6,907,513	206,075	118,960	109,523,119	109,857,819
Total variable rate debt	**284,491,304**	**56,390,858**	**72,501,196**	**13,857,087**	**3,588,936**	**12,425,174**	**443,254,555**	**400,024,180**
Total debt	**Ps. 454,945,142**	**Ps. 153,052,257**	**Ps. 182,065,735**	**Ps. 101,083,584**	**Ps. 173,687,822**	**Ps. 1,147,522,883**	**Ps. 2,212,357,423**	**Ps. 2,211,701,630**

Note: Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates at December 31, 2021, of: Ps. 20.5835 = U.S. $1.00; Ps. 0.1789 = 1.00 Japanese yen; Ps. 27.8834 = 1.00 pound sterling; Ps. 7.108233 = 1.00 UDI; Ps. 23.4086 = 1.00 euro; and Ps. 22.5924 = 1.00 Swiss franc.

(2) Does not include accrued interest.

Quantitative Disclosure of Debt Cash Flow Maturities as of December 31, 2020[1][2]

	Year of expected maturity date							
	2021	2022	2023	2024	2025	2026 Thereafter	Total Carrying Value	Fair Value
Liabilities								
Outstanding debt								
Fixed rate (U.S. dollars)	Ps. 47,898,708	Ps. 32,956,060	Ps. 48,471,704	Ps. 25,996,376	Ps. 49,333,976	Ps. 1,116,179,110	Ps. 1,320,835,934	Ps. 1,347,156,276
Average interest rate (%)							6.37%	
Fixed rate (Japanese yen)	—	—	5,799,000	—	—	15,444,790	21,243,790	18,797,463
Average interest rate (%)							1.35%	
Fixed rate (pounds sterling)	—	9,537,663	—	—	12,204,125	—	21,741,788	23,010,709
Average interest rate (%)							5.72%	
Fixed rate (pesos)	115,284,491	1,999,401	—	57,433,886	—	31,029,696	205,747,474	199,047,983
Average interest rate (%)							7.91%	
Fixed rate (UDIs)	4,314,460	—	—	—	—	33,031,555	37,346,014	30,673,537
Average interest rate (%)							4.03%	
Fixed rate (euros)	42,716,224	38,987,905	34,137,539	30,418,586	40,230,700	117,736,691	304,227,645	315,417,306
Average interest rate (%)							3.77%	
Fixed rate (Swiss francs)	3,385,165	—	8,228,615	—	—	—	11,613,780	11,650,958
Average interest rate (%)							1.93%	
Total fixed rate debt	**213,599,047**	**83,481,030**	**96,636,858**	**113,848,848**	**101,768,801**	**1,313,421,841**	**1,922,756,425**	**1,945,754,232**
Variable rate (U.S. dollars)	122,317,252	25,979,932	11,649,479	56,443,974	5,602,565	9,506,180	231,499,382	228,630,238
Variable rate (Japanese yen)							—	—
Variable rate (euros)	—	—	15,842,049	—	—	—	15,842,049	15,375,645
Variable rate (pesos)	12,524,115	8,471,904	7,026,631	10,768,263	6,856,660	325,035	45,972,609	42,934,001
Total variable rate debt	**134,841,368**	**34,451,836**	**34,518,160**	**67,212,237**	**12,459,225**	**9,831,215**	**293,314,040**	**286,939,885**
Total debt	**Ps. 348,440,415**	**Ps. 117,932,866**	**Ps. 131,155,018**	**Ps. 181,061,085**	**Ps. 114,228,026**	**Ps. 1,323,253,056**	**Ps. 2,216,070,465**	**Ps. 2,232,694,117**

Note: Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates at December 31, 2020, of: Ps. 19.9487 = U.S. $1.00; Ps. 0.1933 = 1.00 Japanese yen; Ps. 27.2579 = 1.00 pound sterling; Ps. 6.605597 = 1.00 UDI; Ps. 24.4052 = 1.00 euro; and Ps. 22.5720 = 1.00 Swiss franc.

(2) Does not include accrued interest.

Quantitative Disclosure of Cash Flow Maturities from Derivative Financial Instruments Held or Issued for Purposes Other than Trading as of December 31, 2021[1] [2]

	Year of expected maturity date							
	2022	2023	2024	2025	2026	2027 Thereafter	Total Carrying Value	Fair Value [3]
Hedging Instruments								
Interest Rate DFI [2][4]								
Interest Rate Swaps (U.S. dollars)								
Variable to fixed	Ps. 4,754,104	Ps. 4,608,186	Ps. 3,422,007	Ps. 2,521,479	—	—	Ps. 15,305,775	Ps. (263,340)
Average pay rate	2.43%	2.37%	2.35%	2.31%	0.00%	0.00%	N.A.	N.A.
Average receive rate	0.86%	1.65%	2.12%	2.26%	0.00%	0.00%	N.A.	N.A.
Interest Rate Options								
Buy Cap, Sell Floor on floating in U.S. dollar LIBOR 1M	—	—	51,458,750	—	—	—	51,458,750	(323,852)
Currency DFI								
Cross-currency swaps								
Receive euros/Pay U.S. dollars	36,728,355	48,031,582	27,410,532	40,585,768	23,338,421	87,687,261	263,781,921	(4,217,800)
Receive Japanese yen/Pay U.S. dollars	—	4,967,860	—	—	—	—	4,967,860	70,651
Receive pounds sterling/Pay U.S. dollars	10,327,298	—	—	12,178,434	—	—	22,505,731	(94,957)
Receive UDI/Pay pesos	—	—	—	3,063,181	17,076,001	10,374,031	30,513,214	6,159,382
Receive Swiss francs/Pay U.S. dollars	—	7,512,978	—	—	—	—	7,512,978	524,471
Currency Options								
Buy Put, Sell Put and Sell Call on Japanese yen	—	—	—	—	14,308,629	—	14,308,629	(206,526)
Buy Call, Sell Call and Sell Put on euros	—	—	29,253,527	16,967,046	—	29,253,527	75,474,101	(1,398,532)
Sell Call on pounds sterling	—	—	—	12,534,024	—	—	12,534,024	(27,896)
Sell Call on Swiss francs	—	8,229,792	—	—	—	—	8,229,792	(12,202)
Sell Call on Euros	14,041,693	15,211,834	—	15,211,834	17,552,116	60,847,337	122,864,815	(917,025)
FX Forwards								
Receive U.S. dollars / Pay pesos	12,340,413	—	—	—	—	—	12,340,413	3,575

N.A. = not applicable.

Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates at December 31, 2021, of: Ps. 20.5835= U.S. $1.00 and Ps. 23.4086 = 1.00 euro.

(2) PEMEX's management uses these DFIs to hedge market risk; however, these DFIs do not qualify for accounting purposes as hedges and are recorded in the financial statements as entered into for trading purposes.

(3) Positive numbers represent a favorable fair value to PEMEX.

(4) PMI's risk management policies and procedures establish that DFIs should be used only for hedging purposes; however, DFIs are not recorded as hedges for accounting purposes.

Quantitative Disclosure of Cash Flow Maturities from Derivative Financial Instruments Held or Issued for Purposes Other than Trading as of December 31, 2020[1][2]

	Year of expected maturity date							
	2021	2022	2023	2024	2025	2026 Thereafter	Total Carrying Value	Fair Value [3]
Hedging Instruments								
Interest Rate DFI [2][4]								
Interest Rate Swaps (U.S. dollars)								
Variable to fixed	Ps. 4,724,765	Ps. 4,607,486	Ps. 4,466,068	Ps. 3,316,471	Ps. 2,443,716	Ps. —	Ps. 19,558,505	Ps. (712,107)
Average pay rate	3.22%	3.25%	3.37%	3.68%	4.13%	0.00%	N.A.	N.A.
Average receive rate	0.90%	0.91%	1.12%	1.67%	2.38%	0.00%	N.A.	N.A.
Interest Rate Options								
Buy Cap, Sell Floor on floating in U.S. dollar LIBOR 1M	—	—	—	49,871,750	—	—	49,871,750	(1,331,188)
Currency DFI								
Cross-currency swaps								
Receive euros/Pay U.S. dollars	37,204,824	35,595,644	46,550,277	26,565,185	39,334,093	107,601,624	292,851,648	9,939,110
Receive Japanese yen/Pay U.S. dollars	—	—	4,814,650	—	—	—	4,814,650	505,772
Receive pounds sterling/Pay U.S. dollars	—	9,781,187	—	—	11,802,848	—	21,584,035	839,037
Receive UDI/Pay pesos	3,000,000	—	—	—	3,063,181	27,450,032	33,513,214	6,834,051
Receive Swiss francs/Pay U.S. dollars	3,018,890	—	7,281,276	—	—	—	10,300,166	913,809
Currency Options								
Buy Put, Sell Put and Sell Call on Japanese yen	—	—	—	—	—	15,456,770	15,456,770	14,918
Buy Call, Sell Call and Sell Put on euros	42,647,378	—	—	30,462,413	17,668,200	30,462,413	121,240,404	3,167,805
Sell Call on pounds sterling	—	—	—	—	12,271,443	—	12,271,443	(85,994)
Sell Call on Swiss francs	—	—	8,225,571	—	—	—	8,225,571	(70,196)
Sell Call on Euros	—	14,621,958	15,840,455	—	15,840,455	57,878,585	104,181,452	(2,118,100)

N.A. = not applicable.

Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates at December 31, 2020, of: Ps. 19.9487= U.S. $1.00 and Ps. 24.4052 = 1.00 euro.

(2) PEMEX's management uses these DFIs to hedge market risk; however, these DFIs do not qualify for accounting purposes as hedges and are recorded in the financial statements as entered into for trading purposes.

(3) Positive numbers represent a favorable fair value to PEMEX.

(4) PMI's risk management policies and procedures establish that DFIs should be used only for hedging purposes; however, DFIs are not recorded as hedges for accounting purposes.

The following tables show the estimated amount of principal and interest cash flow maturities of PEMEX's financial liabilities as of December 31, 2021, and 2020, (DFIs are not included):

Financial Liabilities Interest and Principal Cash Flow Maturities as of December 31, 2021[1]

		Year of expected maturity date						
	Total Carrying Value	2022	2023	2024	2025	2026	2027 Thereafter	Total
Financial Liabilities								
Suppliers	264,056,358	264,056,358	—	—	—	—	—	264,056,358
Accounts and accrued expenses Payable	32,015,808	32,015,808			—	—	—	32,015,808
Leases	59,351,648	12,605,808	9,419,274	8,532,225	7,607,774	6,623,833	48,274,654	93,063,568
Debt	2,249,695,894	476,595,081	345,041,866	278,703,016	188,640,855	254,935,624	2,114,074,975	3,657,991,417
Total	Ps.2,605,119,708	785,273,055	354,461,140	287,235,241	Ps.196,248,629	Ps.261,559,457	Ps.2,162,349,629	4,047,127,151

Note: Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates at December 31, 2021, of: Ps. 20.5835 = U.S. $1.00; Ps. 0.1789 = 1.00 Japanese yen; Ps. 27.8834 = 1.00 pound sterling; Ps. 7.108233 = 1.00 UDI; Ps. 23.4086 = 1.00 euro; and Ps. 22.5924 = 1.00 Swiss franc.

Financial Liabilities Interest and Principal Cash Flow Maturities as of December 31, 2020[1]

		Year of expected maturity date						
	Total Carrying Value	2021	2022	2023	2024	2025	2026 Thereafter	Total
Financial Liabilities								
Suppliers	281,978,041	281,978,041	—	—	—	—	—	281,978,041
Accounts and accrued expenses Payable	30,709,497	30,709,497	—	—	—	—	—	30,709,497
Leases	63,184,128	12,899,935	8,695,992	8,660,013	8,151,473	7,392,278	54,962,972	100,762,663
Debt	2,258,727,317	386,573,778	230,702,075	322,593,741	277,735,672	203,016,590	2,243,851,381	3,664,473,237
Total	Ps.2,634,598,983	Ps.712,161,251	Ps.239,398,067	Ps.331,253,754	Ps.285,887,145	Ps.210,408,868	Ps.2,298,814,353	Ps.4,077,923,438

Note: Numbers may not total due to rounding.

(1) The information in this table has been calculated using exchange rates on December 31, 2020, of: Ps. 19.9487 = U.S. $1.00; Ps. 0.1933 = 1.00 Japanese yen; Ps. 27.2579 = 1.00 Pound sterling; Ps. 6.605597 = 1.00 UDI; Ps. 24.4052 = 1.00 euro; and Ps. 22.5720 = 1.00 Swiss franc.

B. Fair value of derivative financial instruments

PEMEX periodically evaluates its exposure to international hydrocarbon prices, interest rates and foreign currencies and uses derivative instruments as a mitigation mechanism when potential sources of market risk are identified.

PEMEX monitors the fair value of its DFI portfolio on a periodic basis. The fair value represents the price at which one party would assume the rights and obligations of the other and is calculated for DFIs through models commonly used in the international financial markets, based on inputs obtained from major market information systems and price providers. Therefore, PEMEX does not have an independent third party to value its DFIs.

PEMEX calculates the fair value of its DFIs through the tools developed by its market information providers, and through valuation models implemented in software packages used to integrate all of PEMEX´s business areas and accounting, such as SAP (System Applications Products).

PEMEX's DFI portfolio is composed primarily of swaps, for which fair value is estimated by projecting future cash flows and discounting them with the corresponding discount factor; for currency and interest rate options, this is done through the Black and Scholes model, and for crude oil options, through the Levy model for Asian options.

According to IFRS 13 "Fair Value Measurement", the MtM value of DFIs must reflect the creditworthiness of the parties. Consequently, the fair value of a DFI takes into account the risk that either party may default on its obligation. Due to the above, PEMEX applies the credit value adjustment ("CVA") method to calculate the fair value of its DFIs.

Given that PEMEX's hedges are cash flow hedges, their effectiveness is preserved regardless of variations in the underlying assets or reference variables since, through time, asset flows are offset by liabilities flows. Therefore, it is not necessary to measure or monitor the hedges' effectiveness.

PEMEX's assumptions and inputs considered in the calculation of the fair value of its DFIs fall under Level 2 of the fair value hierarchy for market participant assumptions.

Embedded derivatives

In accordance with established accounting policies, PEMEX has analyzed the different contracts that PEMEX has entered into and has determined that according to the terms thereof none of these agreements meet the criteria to be classified as embedded derivatives. Accordingly, as of December 31, 2021 and 2020, PEMEX did not recognize any embedded derivatives (foreign currency or index).

Accounting treatment

PEMEX enters into derivatives transactions with the sole purpose of hedging financial risks related to its operations, firm commitments, planned transactions and assets and liabilities recorded on its statement of financial position. Nonetheless, some of these transactions do not qualify for hedge accounting treatment because they do not meet the requirements of the accounting standards for designation as hedges. They are therefore recorded in the financial statements as instruments entered into for trading purposes, despite the fact that their cash flows are offset by the cash flows of the positions (assets or liabilities) to which they relate. As a result, the changes in their fair value are recognized in the "Derivative financial instruments (cost) income, net" line item in the consolidated statement of comprehensive income.

As of December 31, 2021 and 2020, the net fair value of PEMEX's DFIs (including both DFIs that have not reached maturity and those that have reached maturity but have not been settled), recognized in the consolidated statement of financial position, was Ps. (1,162,119) and Ps. 16,629,978, respectively. As of December 31, 2021, and 2020, PEMEX did not have any DFIs designated as hedges.

The following table shows the fair values and notional amounts of PEMEX's DFIs, including those with an open position and those that have matured but that have not been settled, which were designated as non-hedges for accounting purposes and entered into for trading purposes as of December 31, 2021 and 2020. It should be noted that:

- DFIs' fair value includes CVA and is calculated based on market quotes obtained from market sources such as Bloomberg, *Proveedor Integral de Precios, S.A. de C.V.* ("PIP"), among others.
- Fair value is calculated internally, either by discounting cash flows with the corresponding zero-coupon yield curve, in the original currency, or through other standard methodologies commonly used in the financial markets for certain specific instruments.

DFI	POSITION	December 31, 2021 Notional Amount	December 31, 2021 Fair Value	December 31, 2020 Notional Amount	December 31, 2020 Fair Value
Interest rate swaps	PEMEX pays fixed in U.S. dollar and receives floating in 3-month U.S. dollar LIBOR + spread.	7,075,578	(137,382)	9,350,953	(330,814)
Interest rate swaps	PEMEX pays fixed in U.S. dollar and receives floating in 6-month U.S. dollar LIBOR + spread.	8,027,565	(123,206)	9,724,991	(370,094)
Cross-currency swaps	PEMEX pays the 28-day TIIE + spread in pesos and receives fixed in UDI.	30,513,214	6,159,382	33,513,214	6,834,051
Cross-currency swaps	PEMEX pays fixed in U.S. dollar and receives fixed in Japanese yen.	4,967,860	70,651	4,814,650	505,772
Cross-currency swaps	PEMEX pays floating in 3-month U.S. dollar LIBOR + spread and receives floating in 3-month euro LIBOR + spread.	15,763,653	(471,040)	15,277,498	761,958
Cross-currency swaps	PEMEX pays fixed in U.S. dollar and receives fixed in euro.	248,018,268	(3,746,760)	277,574,150	9,177,151
Cross-currency swaps	PEMEX pays floating in 6-month U.S. dollar LIBOR + spread and receives fixed in Pound sterling.	10,327,298	(14,455)	9,781,187	712,072
Cross-currency swaps	PEMEX pays fixed in U.S. dollar and receives fixed in Pound sterling.	12,178,434	(80,503)	11,802,848	126,965
Cross-currency swaps	PEMEX pays fixed in U.S. dollar and receives fixed in CHF.	7,512,978	524,471	10,300,166	913,809
Interest Rate Options	PEMEX Buy Cap, Sell Floor on floating in U.S. dollar LIBOR 1M.	51,458,750	(323,852)	49,871,750	(1,331,188)
Currency Options	PEMEX Buy Put, Sell Put and Sell Call on Japanese yen	14,308,629	(206,526)	15,456,770	14,918
Currency Options	PEMEX Buy call, Sell Call and Sell Put on euro	75,474,101	(1,398,532)	121,240,404	3,167,805
Currency Options	PEMEX Sell Call on Pound sterling	12,534,024	(27,896)	12,271,443	(85,994)
Currency Options	PEMEX Sell Call on CHF	8,229,792	(12,202)	8,225,571	(70,196)
Currency Options	PEMEX Sell Call on euro	122,864,815	(917,025)	104,181,452	(2,118,100)
Currency Forward	PEMEX pays Pesos and receives U.S. dollar.	12,340,413	3,575	—	—
Interest rate swaps	PEMEX pays fixed in U.S. dollar and receives floating in U.S. dollar LIBOR 1M.	202,632	(2,752)	482,561	(11,199)
Subtotal			(704,052)		17,896,918

DFI		December 31, 2021 Volume (MMb)	December 31, 2021 Fair Value	December 31, 2020 Volume (MMb)	December 31, 2020 Fair Value
Crude oil Options	PEMEX buys Put and sells Put	54.10	(458,068)	55.20	(1,266,940)
			(1,162,119)		16,629,978

DFI	Market	December 31, 2021 Volume (MMb)	December 31, 2021 Fair value	December 31, 2020 Volume (MMb)	December 31, 2020 Fair value
Futures	Exchange traded	(0.61)	Ps. (4,677)	0.64	Ps. (32,340)
Petroleum Products Swaps	Exchange traded	(2.31)	Ps. (28,389)	(1.48)	Ps. (95,572)

Notes: Amounts may not total due to rounding.

(1) The fair value of the Futures and the Petroleum Products Swaps was recognized as "Cash and cash equivalents" in the statement of financial position because PEMEX considered these financial assets to be fully liquid.

The exchange rate for U.S. dollars as of December 31, 2021 and 2020 was Ps. 20.5835 and Ps. 19.9478 per U.S. dollar, respectively. The exchange rate for euros as of December 31, 2021 and 2020 was Ps. 23.4086 and Ps. 24.4052 per euro, respectively.

For the years ended December 31, 2021, 2020 and 2019, PEMEX recognized a net (loss) gain of Ps. (25,224,243), Ps. 17,096,141 and Ps. (23,263,923), respectively, in the "Derivative financial instruments (cost) income, net" line item with respect to DFIs treated as instruments entered into for trading purposes.

The following table presents the fair value of PEMEX's DFIs that are included in the consolidated statement of financial position in Derivative financial instruments (including both DFIs that have not reached maturity and those that have reached maturity but have not been settled), as of December 31, 2021 and 2020:

	Derivatives assets Fair value	
	December 31, 2021	December 31, 2020
Derivatives not designated as hedging instruments		
Forwards	Ps. 22,896	Ps. —
Currency options	164,218	3,184,942
Natural gas options	—	—
Cross-currency swaps	12,286,853	22,763,051
Total derivatives not designated as hedging instruments	12,473,967	25,947,993
Total assets	Ps. 12,473,967	Ps. 25,947,993

	Derivatives liabilities Fair value	
	December 31, 2021	December 31, 2020
Derivatives not designated as hedging instruments		
Forwards	Ps. (19,321)	Ps. —
Crude oil options	(458,068)	(1,266,940)
Currency options	(1,769,276)	(2,219)
Interest rate options	(323,852)	(1,331,187)
Cross-currency swaps	(10,802,229)	(6,005,562)
Interest rate swaps	(263,340)	(712,107)
Total derivatives not designated as hedging instruments	(13,636,086)	(9,318,015)
Total liabilities	Ps. (13,636,086)	Ps. (9,318,015)
Net total	Ps. (1,162,119)	Ps. 16,629,978

The following tables presents the net gain (loss) recognized in income on PEMEX's DFIs for the years ended December 31, 2021, 2020 and 2019, in the consolidated statement of comprehensive income which is presented in the "Derivative financial instruments (cost) income, net" line item:

Derivatives not designated as hedging instruments	Amount of gain (loss) recognized in the Statement of operations on derivatives		
	December 31, 2021	December 31, 2020	December 31, 2019
Forwards	Ps. 255,045	Ps. —	Ps. —
Futures	(1,478,143)	(1,612,650)	(1,460,990)
Crude oil options	(2,373,131)	4,996,014	(2,762,358)
Currency options	(4,791,503)	2,698,748	(2,447,050)
Natural gas options	—	—	49
Interest rate options	522,241	(1,802,514)	—
Cross-currency swaps	(17,344,621)	13,770,849	(16,019,238)
Crude oil futures swaps	(146,350)	(176,341)	—
Natural gas swaps	—	—	2
Interest rate swaps	132,219	(777,965)	(574,338)
Total	Ps. (25,224,243)	Ps. 17,096,141	Ps. (23,263,923)

NOTE 19. EMPLOYEE BENEFITS

Until December 31, 2015, Petróleos Mexicanos and Subsidiary Entities only had defined benefit pension plans for the retirement of its employees, to which only Petróleos Mexicanos and the Subsidiary Entities contribute. Benefits under these plans are based on an employee's salary and years of service completed at retirement. As of January 1, 2016, Petróleos Mexicanos and the Subsidiary Entities also have a defined contribution pension plan, in which both Petróleos Mexicanos and the Subsidiary Entities and the employee contribute to an employee's individual account.

Benefits under the defined benefit plan are mainly based on the years of service completed by the employee, and their remuneration at the date of retirement. The obligations and costs of these plans are recognized based on an actuarial valuation prepared by independent experts. Within the regulatory framework of plan assets, there are no minimum funding requirements. Petróleos Mexicanos and the Subsidiary Entities have established additional plans to cover post-employment benefits, which are based on actuarial studies prepared by independent experts and which include disability, post-mortem pension and the death of retired employees, as well as medical services for retired employees and beneficiaries.

As of December 31, 2019, Petróleos Mexicanos and Subsidiary Entities funded its employees benefits through Mexican trusts, the resources of which come from the retirement line item of PEMEX's annual budget (an operating expense), or any other line item that substitutes or relates to this line item, or that is associated with the same line item and the interests, dividends or capital gains obtained from the investments of the trusts.

In 2019, the Board of Directors of Petróleos Mexicanos approved modifications to the organic structure of PEMEX. As a result of this, the Subsidiary Entities and Petróleos Mexicanos transferred and / or received active personnel through the figure of employer substitution, with which the Subsidiary Entities and Petróleos Mexicanos recognized the retirement obligations of the transferred personnel whose impact was calculated in the actuarial study carried out by the independent experts.

The following table show the amounts associated with PEMEX's labor obligations:

	December 31,	
	2021	2020
Liability for defined benefits at retirement and post-employment at the end of the year	Ps. 1,371,307,692	Ps. 1,516,671,029
Liability for other long-term benefits	12,763,956	18,497,057
Total liability for defined benefits recognized in the consolidated statement of financial position at the end of the year	**Ps. 1,384,071,648**	**Ps. 1,535,168,086**

The amount reflected in Employee Benefit at the end of the year includes both the defined benefit plan (DB) and the defined contribution plan (DC). As for the defined contribution scheme, the Assets (liabilities) recognized in the balance sheet (DC-warranty) went from Ps. 3,051,044 in 2020 to Ps. 2,417,049 in 2021. The expense in the income statement (net cost for the period, DC-guarantee) was Ps. 467,765 and Ps. 356,880 as of December 2021 and 2020, respectively.

The following tables contain detailed information regarding PEMEX's retirement and post-employment benefits:

	December 31,	
Changes in the liability for defined benefits	**2021**	**2020**
Liability for defined benefits at the beginning of the year	Ps. 1,516,671,029	Ps. 1,438,849,732
Current Service cost(*)	41,135,899	22,742,631
Past service cost	34,573	—
Net interest	104,524,369	105,699,575
Liquidation event loss	49,032	—
Defined benefits paid by the fund	(6,608,749)	(5,168,608)
Actuarial losses (gains) in other comprehensive results due to:		
Change in financial assumptions(1)	(266,985,561)	77,094,827
Change in demographic assumptions(1)	44,085,779	(18,581,935)
For experience during the year	2,581,184	(41,069,054)
Assets of the plan during the year(1)	(52,166)	32,531
Contributions paid to the fund(1)	(64,127,697)	(62,928,670)
Defined benefit liabilities at end of year	**Ps. 1,371,307,692**	**Ps. 1,516,671,029**

(*) The variation between 2021 and 2020 is mainly the result of the contractual review, in which the retirement requirements are maintained.

(1) The amount of actuarial losses corresponding to retirement and post-employment benefits recognized in other comprehensive income net of deferred income tax for Ps. 205,401,008 generated in the period from January to December 2021 correspond mainly to the increase in the discount rate from 7.08% in 2020 to 8.46% in 2021. Additionally, changes in the population, age, seniority, salary, pensions and benefits had an impact on the results.

	December 31,	
Changes in pension plan assets	**2021**	**2020**
Plan assets at the beginning of year	Ps. 2,438,724	Ps. 2,585,007
Return on plan assets	294,713	262,273
Payments by the pension fund	(64,623,601)	(63,204,515)
Company contributions to the fund	64,127,697	62,928,670
Actuarial (gains) losses in plan assets	52,164	(32,531)
Adjustment to the Defined Contribution Plan *	—	(100,180)
Pension plan assets at the end of year	**Ps. 2,289,697**	**Ps. 2,438,724**

* The concepts come from the valuation of PMI´s liabilities.

The Labor Fund reduction was due to budgetary requirements derived from the need to meet a financial balance goal in cash flow. In this sense, during 2020 PEMEX's administration implemented a strategy and the contributions to the Fund are scheduled and executed taking into account the initial balance plus the cost of payrolls and retirements for the year, maintaining a minimum operating balance without the operational continuity risk or payment to personnel.

Contributions from PEMEX to the FOLAPE include contributions associated with the exchange of Mexican Government Bonds for Ps. 7,607,500 (including Ps. 1,115,000 of principal and Ps. 6,492,500 of interest) in the months of March, June, September and December, derived from the Federal Government Contribution due to the Modification of the Pension Plan of Petróleos Mexicanos and its Subsidiary Entities. Interest income generated by the total of Government Bonds amounted Ps. 7,094,180 during 2021 of which Petróleos Mexicanos received the payment of Ps. 7,126,559 (see Note 15).

Expected payments for fiscal year 2022 are Ps. 80,211,339.

As of December 31, 2021 and 2020, the amounts and types of plan assets are as follows:

	December 31,	
Plan Assets	2021	2020
Cash and cash equivalents	Ps. 32,199	Ps. 10,845
Debt instruments	2,257,498	2,427,879
Total plan assets	**Ps. 2,289,697**	**Ps. 2,438,724**

	December 31,	
Changes in Defined Benefit Obligations (DBO)	**2021**	**2020**
Defined benefit obligations at the beginning of the year	Ps. 1,519,084,202	Ps. 1,441,356,415
Service costs	21,151,945	20,793,204
Financing costs	104,844,611	105,802,122
Past service costs	34,573	—
Payments by the fund	(71,232,349)	(68,295,593)
Actuarial (losses) gains due to:		
Change in financial assumptions[(1)]	(266,985,561)	77,094,827
Change in demographic assumptions[(2)]	44,085,779	(18,581,935)
For experience during the year[(3)]	2,581,184	(41,069,054)
Reductions	—	34,789
Modifications to the pension plan[(4)]	19,984,109	1,949,427
Defined benefit obligations at the end of year	**Ps. 1,373, 548,493**	**Ps. 1,519,084,202**

(1) Variations in financial assumptions are due to the increase in the discount rate from 7.08% in 2020 to 8.46% in 2021.

(2) The variation between 2021 and 2020 is mainly the result of the contractual review, in which the retirement requirements are maintained.

(3) The variation in this assumption depends on factors that changes from year to year. One of these factors is the estimated increase in employee benefits, from 3.62% in 2020 to 5.81% in 2021.

(4) The variation between 2021 and 2020 is mainly due to the result of the contractual review, in which the retirement requirements are maintained.

The effects on the Defined Benefits Liability upon retirement and post-employment at the end of the period are:

- The effect of an increase or decrease of one percentage point in the discount rate is a -11.11% and 13.75%, respectively, in defined benefit obligations.
- The effect of an increase or decrease of one percentage point in medical services is 2.86% and -2.09%, respectively, in defined benefit obligations.
- The effect of an increase or decrease of one percentage point in the inflation is 8.88% and -7.55%, respectively, in defined benefit obligations.
- The effect of an increase or decrease of one percentage point in the wage is 1.17% and -1.03%, respectively, in defined benefit obligations.

The effects previously mentioned were determined using the projected unit credit method which was the same method used in the prior valuation.

Assumptions regarding future mortality are based on EMSSA2009 to Unique Circular of the *Comisión Nacional de Seguros y Fianzas* (National Commission of Insurance and Bonds) and include improvements to the mortality rate established in 2021. For the December valuation, the mortality table for retired personnel was updated using an actuarial proposal based on the experience of Petróleos Mexicanos and its Subsidiary Entities. The mortality table for the incapacitated personnel is the EMSSInc-IMSS2012 and for the disabled personnel the EMSSInv-IMSS2012.

PEMEX's plan assets is held in the FOLAPE trusts, which are managed by BBVA Bancomer, S. A. and a technical committee for each trust that is comprised of personnel from Petróleos Mexicanos and the trusts. As of December 31, 2021, FOLAPE has a balance of Ps. 30,458, while the remaining Ps. 2,259,239 belong to affiliate companies that are in charge of managing their own funds.

The following tables present additional fair value disclosure about plan assets and indicate their rank, in accordance with IFRS 13, as of December 31, 2021 and 2020:

	Fair value measurements as of December 31, 2021			
Plan assets	Quoted prices in active markets for identical assets (level 1)	Significant observable inputs (level 2)	Significant unobservable inputs (level 3)	Total
Cash and cash equivalents	Ps. 32,199	Ps. —	Ps. —	Ps. 32,199
Debt instruments	2,257,498	—	—	2,257,498
Total	**Ps. 2,289,697**	**Ps. —**	**Ps. —**	**Ps. 2,289,697**

	Fair value measurements as of December 31, 2020			
Plan assets	Quoted prices in active markets for identical assets (level 1)	Significant observable inputs (level 2)	Significant unobservable inputs (level 3)	Total
Cash and cash equivalents	Ps. 10,845	Ps. —	Ps. —	Ps. 10,845
Debt instruments	2,427,879	—	—	2,427,879
Total	**Ps. 2,438,724**	**Ps. —**	**Ps. —**	**Ps. 2,438,724**

As of December 31, 2021 and 2020, the principal actuarial assumptions used in determining the defined benefit obligation for the plans are as follows:

	December 31,	
	2021	2020
Rate of increase in salaries	4.47%	4.47%
Rate of increase in pensions	4.00%	4.00%
Rate of increase in post-mortem pensions	0.00%	0.00%
Rate of increase in medical services	7.65%	7.65%
Inflation assumption	4.00%	4.00%
Rate of increase in basic basket for active personnel	5.00%	5.00%
Rate of increase in basic basket for retired personnel	4.00%	4.00%
Rate of increase in gas and gasoline	4.00%	4.00%
Discount and return on plan assets rate [1]	8.46%	7.08%
Average length of obligation (years)	14.38	17.52

[1] In accordance with IAS 19, the discount rate was determined using as a reference the interest rates observed in Mexican Government bonds, based on the Fixed Rate bonds of the Federal Government ("Bonos M") and the "Cetes", as well as the flow of expected payments to cover the contingent obligations. As a consequence of the change in the yields of the financial instruments mentioned above at the end of the year, the discount rate increased compared to the end of the 2020.

Other long-term benefits

Petróleos Mexicanos and the Subsidiary Entities have established other long-term benefit plans for their employees, to which employees do not contribute, which correspond to the seniority premiums payable for disability, death and survivor benefits (payable to the widow and beneficiaries of worker), medical service, gas and basic basket for beneficiaries. Benefits under these plans are based on an employee's salary and years of service completed at separation date. Obligations and costs of such plans are recorded in accordance with actuarial valuations performed by independent actuaries.

The amounts recognized for long-term obligations for the years ended December 31, 2021 and 2020 are as follows:

	December 31,	
Change in the liability for defined benefits	**2021**	**2020**
Liabilities defined benefit at the beginning of year	Ps. 18,497,057	Ps. 17,965,635
Charge to income for the year	2,354,238	2,865,809
Actuarial losses (gains) recognized in income due to:		
Change in financial assumptions	(4,121,075)	912,673
Change in demographic assumptions	(2,027,902)	(439,969)
For experience during the year	(1,937,645)	(2,806,112)
Benefits paid	(717)	(979)
Liabilities defined benefit at the end of year	**Ps. 12,763,956**	**Ps. 18,497,057**

The expected long-term benefit payments for 2022 amount to Ps. 317,898.

The principal actuarial assumptions used in determining the defined benefit obligation for the plans are:

- The effect of an increase or decrease of one percentage point in the discount rate is -15.47% and 20.31%, respectively, in defined benefit obligations.
- The effect of an increase or decrease of one percentage point in medical services is 7.65% and -5.41%, respectively, in defined benefit obligations.
- The effect of an increase or decrease of one percentage point in the inflation is 0.31% and -0.29%, respectively, in defined benefit obligations.
- The effect of an increase or decrease of one percentage point in the wage is 3.94% and -3.55%, respectively in defined benefit obligations.

	December 31,	
	2021	**2020**
Rate of increase in salaries	4.47%	4.47%
Inflation assumption	4.00%	4.00%
Rate of increase in basic basket for active personnel	5.00%	5.00%
Rate of increase in basic basket for retired personnel	4.00%	4.00%
Rate of increase in gas and gasoline	4.00%	4.00%
Discount and return on plan assets rate[1]	8.46%	7.08%
Average length of obligation (years)	14.38	17.52

[1] In accordance with IAS 19, the discount rate was determined using as a reference the interest rates observed in Mexican Government bonds denominated in pesos (Cetes and M bonds), as well as the flow of payments expected to cover contingent obligations. As a result of the profits in financial instruments at the end of 2021, the discount rate increased as compared 2020.

NOTE 20. PROVISIONS FOR SUNDRY CREDITORS

At December 31, 2021, 2020 and 2019, the provisions for sundry creditors and others is as follows:

	2021	**2020**	**2019**
Provision for plugging of wells (Note 13)	Ps. 70,144,756	Ps. 77,125,513	Ps. 80,849,900
Provision for trails in process (Note 27)	11,114,006	8,321,816	8,075,031
Provision for environmental costs	11,138,904	9,178,555	9,086,977
	Ps. 92,397,666	**Ps. 94,625,884**	**Ps. 98,011,908**

The following tables show the allowance account for plugging of wells, trials in progress and environmental costs:

	Plugging of wells		
	2021	2020	2019
Balance at the beginning of the year	77,125,513	Ps. 80,849,900	84,050,900
(Decrease) Increase capitalized in fixed assets	(13,834,388)	(12,816,336)	(2,826,003)
Unwinding of discount against income	4,454,106	4,555,692	3,318,384
Unrealized foreign exchange loss (gains)	2,454,810	4,766,921	(3,577,200)
Amount used	(55,285)	(230,664)	(116,181)
Balance at the end of the year	**Ps. 70,144,756**	**Ps. 77,125,513**	**Ps. 80,849,900**

	Trials in progress		
	2021	2020	2019
Balance at the beginning of the year	Ps. 8,321,816	Ps. 8,075,031	Ps. 6,483,078
Additions against expenses	4,818,298	972,692	1,901,930
Provision cancellation	(2,025,221)	(724,026)	(309,977)
Amount used	(887)	(1,881)	—
Balance at the end of the year	**Ps. 11,114,006**	**Ps. 8,321,816**	**Ps. 8,075,031**

	Environmental costs		
	2021	2020	2019
Balance at the beginning of the year	Ps. 9,178,555	Ps. 9,086,977	Ps. 11,219,278
Additions against expenses	2,424,037	1,669,063	4,745,835
Cancellation against expenses	(407,671)	(1,574,810)	(6,873,905)
Amount used	(56,017)	(2,675)	(4,231)
Balance at the end of the year	**Ps. 11,138,904**	**Ps. 9,178,555**	**Ps. 9,086,977**

Provision for plugging of wells

PEMEX records a provision at present value for the future plugging cost of an oil production facility or pipeline at the time that it is built.

The plugging provision represents the present value of plugging costs related to oil and gas properties. These provisions have been created based on internal estimates of PEMEX. PEMEX has made certain assumptions based on the current economic environment that PEMEX believes provide a reasonable basis on which to estimate the future liability. These estimates are reviewed regularly to take into account any material changes in the assumptions. However, actual plugging costs in the long run will depend on future market prices for the necessary plugging work, which reflect market conditions at the time the work is being performed.

The calculation of this provision considers the year-end exchange rate, the projected inflation rate for the United States, interpolated discount rates based on the maturity date of long-term debt instruments in U.S. markets, as well as unit costs obtained from current contracts as of the valuation date, the current status of PEMEX's wells and the limit of proved and developed reserves as of January 1, 2022.

The decrease in the provision in 2021, 2020 and 2019 against fixed assets corresponded to a decrease in the reserve limits, adjustments to the discount rate and applications to the reserve. This includes the effect of the discount rate over time of Ps. 4,454,106, Ps. 4,555,692 and Ps. 3,318,384 for 2021, 2020 and 2019, respectively. The discount rate ranges used during 2021, 2020 and 2019 were from 3.114% to 8.040%, 3.268% to 7.799% and 3.279% to 6.960% for U.S. dollar denominated assets, respectively.

Moreover, the time of plugging depends on when the fields cease to have economically viable production rates, which, in turn, depends on the inherently uncertain future prices of oil and gas. Well plugging of works will be carried out as follows:

Year	Amount
2022	Ps. 56,574
2023	1,906,938
2024	4,820,519
2025	1,239,191
2026	3,391,741
More than 5 years	58,729,793
Total	Ps. 70,144,756

Provision for environmental costs

PEMEX is subject to the provisions of the *Ley General del Equilibrio Ecológico y la Protección al Ambiente* (General Law on Ecological Equilibrium and Environmental Protection). To comply with this law, environmental audits of PEMEX's larger operating, storage and transportation facilities have been or are being conducted. Following the completion of such audits, PEMEX has signed various agreements to implement environmental remediation and improve environmental plans. Such plans will be sent to the *Agencia Nacional de Seguridad Industrial y de Protección al Medio Ambiente del Sector Hidrocarburos* (National Agency for Industrial Safety and Environmental Protection of the Hydrocarbons Sector or "ASEA"). The period of execution of these works is not defined, as they are subject to the budgets that may be granted to PEMEX.

NOTE 21. INCOME TAXES AND DUTIES

The *Ley de Ingresos sobre Hidrocarburos* ("Hydrocarbons Revenue Law") was published in the Official Gazette of the Federation on August 11, 2014, and came into effect, on January 1, 2015. The Hydrocarbons Revenue Law sets forth the fiscal regime for Petróleos Mexicanos applicable to the assignments and the contracts that were established on such date. Likewise, every year the Federal Revenue Law is published in the Official Gazette of the Federation and includes specific regulations for Petróleos Mexicanos and the Subsidiary Entities.

Tax regime applicable to Assignments

The tax regime applicable to the exploration and production for the assignments granted to PEMEX by the Mexican Government includes the following taxes and duties:

A. Derecho por la Utilidad Compartida "DUC" (Profit-sharing Duty).

As of January 1, 2015, Pemex Exploration and Production is obligated to pay a Profit-sharing Duty.

As of January 1, 2021 and 2020, the applicable rate of this duty was 54% and 58%, respectively. The computation of this duty is based on the excess of the value of hydrocarbons produced during the fiscal year (including self-consumption, shrinkage and burning), minus certain permitted deductions by the Hydrocarbons Revenue Law, including part of the investments and some costs, expenses and duties. Pursuant to the Hydrocarbons Revenue Law, this duty has been decreased on an annual basis. As of January 1, 2021, this duty was set at 40%.

During 2021, this duty was Ps. 374,433,879 from annual payments presented on March 31, 2022 paid as follows: Ps. 300,374,423, in monthly installment payment and a tax credit by the Mexican Government of Ps. 73,280,000; resulting in a balance of Ps. 779,456 as of December 31, 2021.

During 2020, this duty was Ps. 218,912,687 from annual payments presented on March 31, 2021 paid as follows: Ps. 153,292,899, in monthly installment payment and a tax credit of Ps. 65,000,000 and offset by a favorable balance of Ps. 149,715; resulting in a balance of Ps. 470,073 as of December 31, 2020.

Duties and income tax paid as of December 31, 2021, 2020 and 2019 were Ps. 265,883,549, Ps. 172,369,522 and Ps. 347,515,447, respectively.

The accounting result differs from the tax result mainly due to differences in depreciation, non-deductible expenses and others. Such differences generate a deferred DUC.

Total DUC and other as of December 31, 2021, 2020 and 2019 are integrated as follows:

	2021	2020	2019
DUC	Ps. 374,433,879	Ps. 218,912,687	Ps. 343,242,476
Fiscal credit	(73,280,000)	(65,000,000)	—
DUC from prior years	—	—	(39)
Deferred DUC expense	5,673,403	696,449	29,570,063
Total DUC	**Ps. 306,827,282**	**Ps. 154,609,136**	**Ps. 372,812,500**

The principal factors generating the deferred DUC are the following:

	2021	2020
Deferred DUC asset:		
Tax credits	Ps. 571,306,914	Ps. 572,796,156
Deferred Profit-sharing duty liability:		
Wells, pipelines, properties, plant and equipment	(241,237,295)	(208,999,954)
Deferred DUC asset net	330,069,619	363,796,202
Unrecognized Deferred DUC	(327,321,418)	(355,374,599)
Net, deferred DUC asset	**Ps. 2,748,201**	**Ps. 8,421,603**

The expected benefit for DUC in 2021 was different from that which would result from applying the 54% rate to the tax base, as a result of the line items mentioned in the tables below.

The expected expense for DUC in 2020 was different from that which would result from applying the 58% rate to the tax base, as a result of the line items mentioned in the next table.

	2021	2020	2019
Expected expense (benefit):	Ps. 147,520,595	Ps. (20,837,768)	Ps. 43,432,712
Increase (decrease) resulting from:			
Expected benefit contract	(5,333,064)	(496,643)	(4,948,542)
Duties from prior year	—	—	(26)
Non-cumulative profit[1]	(1,252,957,737)	(2,291,937,519)	(1,130,442,995)
Non-deductible expenses[1]	1,110,770,206	2,313,271,930	1,091,958,851
Production value	507,997,938	321,353,133	495,394,906
Deductible duties	(44,270,598)	(21,850,672)	(39,891,325)
DUC tax credit[2]	(73,280,000)	(65,000,000)	—
Deferred DUC expense	5,673,403	696,449	29,570,063
Deductions cap	(89,293,461)	(80,589,774)	(112,261,105)
DUC from prior years	—	—	(39)
DUC-Profit-sharing duty expense	**Ps. 306,827,282**	**Ps. 154,609,136**	**Ps. 372,812,500**

[1] For 2020, fluctuations changes are included which have no effect on the determination of the DUC.
[2] Corresponds to the tax credit granted by the Mexican Government on February 19, 2021 and April 21, 2020.

On February 19, 2021, the Mexican Government, through a presidential decree, granted PEMEX a reduction in its tax burden equal to Ps. 73,280,000 for 2021. The tax benefit was granted as a measure of release of resources for PEMEX to increase investment in hydrocarbon exploration and production activities.

On April 21, 2020, the Mexican Government published a decree in the Official Gazette of the Federation, granting a tax benefit for the amount of Ps. 65,000,000 to PEMEX, which resulted in a decrease of PEMEX's DUC payments. The tax benefit was granted due to the weakened financial environment due to changes in economic and business conditions resulting from geopolitical and economic events and the global health emergency caused by the COVID-19 pandemic.

This decrease in the Profit-sharing Duty is incremental to the one resulting from the decrease of the rate from 58% to 54% in 2021 in accordance with amendments to the 2021 Hydrocarbons Revenue Law.

B. Derecho de Extracción de Hidrocarburos (Hydrocarbons Extraction Duty).

SHCP considers the effects of variations in the U.S. producer price index, or another alternative index, when it determines the rate to be published in the Official Gazette of the Federation.

This duty is to be calculated using a rate based on a formula applicable to each type of hydrocarbon, the volume of production and utilizing the relevant market price for hydrocarbons in U.S. Dollars.

During 2021 and 2020, Pemex Exploration and Production incurred Ps. 81,982,589 and Ps. 37,673,573 respectively, which are included in the cost of sales line item.

C. Derecho de Exploración de Hidrocarburos (Exploration Hydrocarbons Duty).

Pemex Exploration and Production as "assignee" must make monthly payments for this duty. The rates for 2021 were 1,442.57 pesos per square kilometer of non-producing areas. After 60 months, this tax increases to 3,449.63 pesos per square kilometer for each additional month that the area is not producing. These amounts will be updated on an annual basis in accordance with the national consumer price index.

During 2021 and 2020, Pemex Exploration and Production incurred Ps. 1,443,437 and Ps. 1,068,598, respectively, which are included in the cost of sales line item.

D. Impuesto por la actividad de Exploración y Extracción de Hidrocarburos (Exploration and Extraction Hydrocarbons Duty).

The assignments granted by the Mexican Government create a tax on the exploration and extraction activities carried out in the corresponding area. The monthly tax paid during the exploration phase and until the extraction phase begins is 1,881.60 pesos per square kilometer. During the extraction phase of a project, a monthly tax of 7,526.47 pesos per square kilometer is payable until the relevant contract for exploration and extraction or assignment is terminated.

During 2021 and 2020, the incurred tax was Ps. 4,701,122 and Ps. 4,288,716 respectively, which are included in the cost of sales line item.

Tax Regime applicable to contracts:

As of January 1, 2015, the tax regime applicable to Pemex Exploration and Production for contracts is set forth in the Hydrocarbons Revenue Law which regulates, among other things, the fiscal terms applicable to the exploration and extraction contracts (license, profit sharing contracts, production sharing and services) and sets duties and other taxes paid to the Mexican Government.

The Hydrocarbons Revenue Law also establishes the following duties applicable to PEMEX in connection with assignments granted to it by the Mexican Government:

- ***Cuota Contractual para la Fase Exploratoria (Exploration Phase Contractual Fee)***

During the exploration phase of an exploration and extraction contract, the Mexican Government is entitled to collect a monthly payment of 1,442.58 pesos per square kilometer of non-producing areas. After 60 months, this fee increases to 3,449.63 pesos per square kilometer for each additional month that the area is not producing. The fee amount will be updated on an annual basis in accordance with the national consumer price index.

- ***Regalías (Royalties)***

Royalty payments to the Mexican Government are determined based on the "contractual value" of the relevant hydrocarbons, which is based on a variety of factors, including the type of underlying hydrocarbons (e.g., crude oil, associated natural gas, non-associated natural gas or condensates), the volume of production and the market price. Royalties are payable in connection with licensing contracts, production-sharing contracts and profit-sharing contracts.

- ***Pago del Valor Contractual (Contractual Value Payment)***

Licensing contracts require a payment to the Mexican Government calculated as a percentage of the "contractual value" of the hydrocarbons produced, as determined by the SHCP on a contract-by-contract basis.

- ***Porcentaje a la Utilidad Operativa (Operating Profit Payment)***

Production-sharing contracts and profit-sharing contracts require a payment equivalent to a specified percentage of operating profits. In the case of production-sharing contracts, this payment shall be made in-kind through delivery of the hydrocarbons produced. In the case of profit-sharing contracts, this payment shall be made in cash.

- ***Bono a la Firma (Signing Bonus)***

Upon execution of a licensing contract, a signing bonus is to be paid to the Mexican Government in an amount specified by the SHCP in the relevant bidding terms and conditions or in the contracts resulting from a migration.

- ***Impuesto por la actividad de Exploración y Extracción de Hidrocarburos (Hydrocarbons Exploration and Extraction Activities Tax)***

Contracts for exploration and extraction granted by the Mexican Government will include a specified tax on the exploration and extraction activities carried out in the relevant area. The monthly tax paid during the exploration phase and until the extraction phase begins is 1,881.60 pesos per square kilometer. During the extraction phase of a project, a monthly tax of 7,526.47 pesos per square kilometer is payable until the relevant contract for exploration and extraction or assignment is terminated. During 2021 and 2020 the incurred tax amounted to Ps. 211,095 and Ps. 204,293, respectively.

Other applicable taxes

The Subsidiary Entities are subject to the Income Tax Law and the Value Added Tax Law. Pemex Industrial Transformation is also subject to the Special Tax on Production and Services (IEPS Tax).

2020 indirect taxes are as listed below:

A. IEPS Tax

IEPS Sobre la Venta de los Combustibles Automotrices (IEPS Tax on the Sale of Automotive Fuels): This tax is a fee on domestic sales of automotive fuels, gasoline and diesel. Pemex Industrial Transformation collects the fee on behalf of the Mexican Government. The applicable fees for this tax are Ps. 5.11 per liter of gasoline with an octane rating lower than 91; 4.32 pesos per liter of gasoline with an octane rating greater than or equal to 91 and 5.62 pesos per liter of diesel. The amount of the fee will depend on the class of fuel. The fee is fixed yearly and adjusted on a weekly basis by the SHCP. The fees apply to sales in Mexico and imports.

IEPS Beneficio de Entidades Federativas, Municipios y Demarcaciones Territoriales (IEPS Tax in Favor of States, Municipalities and Territories): This tax is a fee on domestic sales of automotive fuels, gasoline and diesel. Pemex Industrial Transformation collects the fee on behalf of the Mexican Government. The applicable fees for this tax are 45.14 cents per liter of gasoline with an octane rating of less than 91, 55.09 cents per liter of gasoline with an octane rating greater than or equal to 91 and 37.47 cents per liter of diesel. These fees change yearly in accordance with inflation. Funds gathered by this fee are allocated to Mexican states and municipalities as provided for in the Ley de Coordinación Fiscal (Tax Coordination Law). The fees only apply to sales in Mexico and are not subject to VAT.

IEPS a los Combustibles Fósiles (IEPS Tax on Fossil Fuels): This tax is a fee on domestic sales of fossil fuels. Pemex Industrial Transformation collects the fee on behalf of the Mexican Government. The applicable fees for this tax are 7.73 cents per liter of propane, 10.00 cents per liter of butane, 13.56 cents per liter of gasoline and aviation fuel, 16.19 cents per liter of jet fuel and other kerosene, 16.45 cents per liter of diesel, 17.56 cents per liter of fuel oil, Ps. 20.38 per ton of petroleum coke, Ps. 47.77 per ton of coal coke, Ps. 35.97 per ton of mineral carbon and Ps. 52.00 per ton of carbon from other fossil fuels. These fees change yearly in accordance with inflation and apply to imports to Mexico.

B. Value-Added Tax (“VAT”)

For VAT purposes, final monthly payments are determined based on PEMEX’s cash flow, in accordance with the provisions of the Value Added Tax Law, applicable to payers of this tax. The general rate to be applied is 16%. Certain activities with incentives will have the rate of 0%.

Beginning on January 1, 2019, a new Decree of fiscal incentives began to apply to the northern border region, which consisted of a credit equivalent to 50% of the general rate, applicable directly at the time of the sale or service. This incentive is applicable in 6 states in the northern border region and includes 43 municipalities in those states.

Petróleos Mexicanos and its Subsidiary Entities apply this tax benefit to the operations they carry out within the municipalities of the States included in the Decree.

VAT is applied to the sale of goods, the rendering of services, the granting of the temporary use of goods in the national territory and the importation of goods and services to the national territory. VAT taxpayers transfer VAT to their customers and are entitled to credit the VAT paid to their suppliers and on their imports. The net balance between VAT transferred to customers and paid to suppliers and on imports results each month in the VAT to be paid to the tax authorities or in an amount in favor of the taxpayer. The taxpayer has the right to credit VAT in favor against VAT payable in future months, to request a refund or to offset it against other payable federal taxes.

Taxes on Income are described below:

C. Income Tax

As of January 1, 2015, Petróleos Mexicanos, the Subsidiary Entities and the Subsidiary Companies residing in Mexico for tax purposes are subject to the Income Tax Law.

This tax is calculated by applying a rate of 30% to the tax result. Tax result is the excess of total revenues over the allowed deductions and tax losses from previous years.

Accounting income differs from taxable income primarily due to the effects of inflation and differences between depreciation and other non-deductible expenses.

For the years ended December 31, 2021, 2020 and 2019, Petróleos Mexicanos and its Subsidiary Companies incurred the following income tax expense (benefit):

	2021	2020	2019
Current income tax	Ps. 3,573,731	Ps. 5,370,822	Ps. 4,247,998
Deferred income tax	(3,052,891)	25,592,117	(33,237,009)
Total (benefit) expense income tax, net	**Ps. 520,840**	**Ps. 30,962,939**	**Ps. (28,989,011)**

As of December 31, 2021 and 2020, Pemex Exploration and Production and Pemex Industrial Transformation did not recognize deferred income assets of Ps. 744,802,838 and Ps. 743,263,723, respectively, due to their expectation that future tax income will not correspond to such benefits. These amounts are mainly from fiscal losses to be amortized amounting with an expiration year from 2026 to 2032.

The principal factors generating the deferred income tax are the following:

		2020	Recognized in profit and loss	Recognized in OCI	2020
Deferred income tax asset:					
Provisions	Ps.	8,919,555	2,112,705	—	11,032,260
Employee benefits provision		71,640,981	3,652,157	(13,582,084)	61,711,054
Advance payments from clients		188,283	(11,316)	—	176,967
Accrued liabilities		1,681,362	995,602	—	2,676,964
Non-recoverable accounts receivable		102,435	(77,545)	—	24,890
Derivative financial instruments		41,735	(30,989)	—	10,746
Wells, pipelines, properties and equipment		5,151,623	300,986	—	5,452,609
Tax loss carry-forwards[1]		12,427,658	(3,959,473)	—	8,468,185
Total deferred income tax asset		100,153,632	2,982,127	(13,582,084)	89,553,675
Deferred income tax liability:					
Wells, pipelines, properties, plant and equipment		(1,101,832)	(89,202)	—	(1,191,034)
Other		(2,310,282)	159,966	—	(2,150,316)
Total deferred income tax liability		(3,412,114)	70,764	—	(3,341,350)
Net long-term deferred income tax asset	**Ps.**	**96,741,518**	3,052,891	(13,582,084)	86,212,325

		2019	Recognized in profit and loss	Recognized in OCI	2020
Deferred income tax asset:					
Provisions	Ps.	8,880,184	39,371	—	8,919,555
Employee benefits provision		68,290,356	4,451,358	(1,100,733)	71,640,981
Advance payments from clients		305,000	(116,717)	—	188,283
Accrued liabilities		2,101,011	(419,649)	—	1,681,362
Reserve due to depreciation of inventories		189,751	(189,751)	—	—
Non-recoverable accounts receivable		709,328	(606,893)	—	102,435
Derivative financial instruments		136,260	(94,525)	—	41,735
Wells, pipelines, properties and equipment		8,071,570	(2,919,947)	—	5,151,623
Tax loss carry-forwards[1]		38,427,643	(25,999,985)	—	12,427,658
Total deferred income tax asset		127,111,103	(25,856,738)	(1,100,733)	100,153,632
Deferred income tax liability:					
Wells, pipelines, properties, plant and equipment		(1,614,704)	512,872	—	(1,101,832)
Other		(2,062,031)	(248,251)	—	(2,310,282)
Total deferred income tax liability		(3,676,735)	264,621	—	(3,412,114)
Net long-term deferred income tax asset		**Ps. 123,434,368**	**(25,592,117)**	**(1,100,733)**	**96,741,518**

[1] Tax loss carryforwards expire in 2031.

Expense attributable to the profit (loss) from continuing operations before income taxes was different from that which would result from applying the 30% rate to profit, as a result of the items listed below:

	For the years ended December 31,					
	2021		2020		2019	
Expected (loss) income tax expense	Ps.	(9,267,948)	Ps.	28,835,256	Ps.	3,707,023
Increase (decrease) resulting from:						
Tax effect of inflation-net		2,845,995		5,694,637		6,487,844
Fiscal updating of pipelines, properties and equipment		—		(161,883)		(5,290,734)
Cancellation of tax credits		—		—		(24,189,922)
Expected expenses from contracts		1,311,975		—		—
Retirement benefits		1,101,292		(8,206,693)		(10,698,848)
Non-deductible expenses		3,506,603		2,405,635		4,826,745
Others-net		1,022,923		2,395,987		(3,831,119)
Income tax expense (benefit), net	**Ps.**	**520,840**	**Ps.**	**30,962,939**	**Ps.**	**(28,989,011)**

As of December 31, 2021 and 2020, the net accumulated effect of actuarial gains and losses on deferred tax was Ps. 4,664,868 and Ps. 18,246,952, respectively. In addition, as of December 31, 2021 and 2020, the deferred tax effect of actuarial gains and losses is presented in comprehensive loss in the amounts of Ps. 13,582,084 and Ps. 1,100,733, respectively.

NOTE 22. EQUITY (DEFICIT)

A. Certificates of Contribution "A"

The capitalization agreement between Petróleos Mexicanos and the Mexican Government states that the Certificates of Contribution "A" constitute permanent capital.

During 2021, Petróleos Mexicanos received Ps. 316,354,129 in Certificates of Contribution "A" from the Mexican Government to help improve PEMEX's financial position.

During 2020, Petróleos Mexicanos received Ps. 46,256,000 in Certificates of Contribution "A" from the Mexican Government to help improve PEMEX's financial position.

PEMEX's Certificates of Contribution "A" are as follows:

	Amount	
Certificates of Contribution "A" as of December 31, 2019	Ps.	478,675,447
Increase in Certificates of Contribution "A" during 2020		46,256,000
Certificates of Contribution "A" as of December 31, 2020	Ps.	524,931,447
Increase in Certificates of Contribution "A" during 2021		316,354,129
Certificates of Contribution "A" as of December 31, 2021	**Ps.**	**841,285,576**

Mexican Government contributions made in the form of Certificates of Contribution "A" during 2021 totaled Ps. 316,354,129 and were designated for the construction of the Dos Bocas Refinery and for the payment of debt, as follows:

Date	Construction of the Dos Bocas Refinery	Payment of debt
January 22	Ps. 12,000,000	—
February 11	10,000,000	—
February 24	—	32,062,000
March 5	7,000,000	—
March 26	2,000,000	—
April 5	5,000,000	—
April 26	2,050,000	—
May 3	7,000,000	—
May 4	—	32,062,000
June 21	4,000,000	—
July 5	4,000,000	—
July 22	3,780,000	—
August 2	—	32,596,000
August 9	1,500,000	—
August 17	1,500,000	—
August 25	2,000,000	—
August 31	4,000,000	—
September 10	1,500,000	—
September 17	2,000,000	—
September 27	1,800,000	—
October 5	1,500,000	—
October 12	2,400,000	—
October 19	1,000,000	—
October 26	1,000,000	—
November 5	1,000,000	—
November 16	1,000,000	—
November 19	—	32,615,539
November 22	1,000,000	—
November 26	1,355,290	—
December 8	6,300,000	—
December 13	1,000,000	—
December 20	—	73,233,300
December 22	2,000,000	—
December 27	17,000,000	—
December 30	6,100,000	—
Total	**Ps. 113,785,290**	**Ps. 202,568,839**

B. Mexican Government contributions

During 2021 and 2020 there were no Mexican Government contributions apart from Certificates of Contribution "A".

C. Legal reserve

Under Mexican law, each of the Subsidiary Companies is required to allocate a certain percentage of its net income to a legal reserve fund until the fund reaches an amount equal to a certain percentage of each Subsidiary Company's capital stock.

During 2021 and 2020, there were no changes to the legal reserve.

D. Accumulated other comprehensive income (loss)

As a result of the discount rate analysis related to employee benefits liability, for the periods ended December 31, 2021 and 2020 PEMEX recognized net actuarial losses in other comprehensive income (loss) net of deferred income tax for Ps. 205,401,008 and Ps. (19,178,587), respectively, which included net of deferred income tax of Ps. (13,582,084) and Ps. (1,100,733), respectively, related to retirement and post-employment benefits. The variation related to retirement and post-employment benefits was the result of an increase in the discount and return on plan assets rates from 7.08% as of December 31, 2020 to 8.46% as of December 31, 2021.

E. Accumulated deficit from prior years

PEMEX has recorded negative earnings in the past several years. However, the *Ley de Concursos Mercantiles* ("Commercial Bankruptcy Law of Mexico") is not applicable to Petróleos Mexicanos and the Subsidiary Entities. Furthermore, the financing agreements to which PEMEX is a party do not provide for financial covenants that would be breached or events of default that would be triggered as a consequence of negative equity.

F. Uncertainty related to going concern

The consolidated financial statements have been prepared assuming PEMEX will continue as a going concern. The going concern assumption contemplates the realization of assets and satisfaction of liabilities in normal course of business. However, substantial doubt about PEMEX's ability to continue as a going concern exists.

Facts and conditions

PEMEX has substantial debt, incurred mainly to finance the capital expenditures needed to carry out its capital investment projects and to fund its operating expenses. Due to its heavy fiscal burden resulting from the payment of hydrocarbon extraction duties and other taxes, the cash flows derived from PEMEX's operations in recent years have not been sufficient to fund its operations and capital expenditure programs. As a result, PEMEX's indebtedness has increased significantly, and its working capital has deteriorated. In recent years, PEMEX's level of indebtedness relative to its oil reserves has increased substantially and has been financially supported by the Mexican Government.

In 2020 and 2021, certain ratings agencies downgraded PEMEX's credit rating, mainly driven by the effects of COVID-19, as well the volatility of the crude oil prices and the downgrade of the Mexican Government's sovereign debt rating, impacting PEMEX´s access to the financial markets, the cost and terms of PEMEX's new debt and contract renegotiations that PEMEX may carry out during 2022 and 2023. The recent Mexican Government's economic policies of subsidizing gasoline price to local consumers may have an impact on public finances, restraining the Government cash availability and increasing the uncertainty of cash available for PEMEX. These conditions have negatively impacted PEMEX´s financial performance and also its liquidity position.

PEMEX recognized a net loss of Ps. 294,775,877, Ps. 509,052,065 and Ps. 282,112,024, during 2021, 2020 and 2019, respectively. In addition, as of December 31, 2021 and 2020, PEMEX had a negative equity of Ps. 2,170,000,783, and Ps. 2,404,727,030, respectively, mainly due to continuous net losses, and a negative working capital of Ps. 464,254,286 and Ps. 442,550,332, as of December 31, 2021 and 2020, respectively.

PEMEX has budget autonomy, and, in public finance terms, is subject to the cash flows financial balance goals approved in the *Decreto de Presupuesto de Egresos de la Federación* ("Federal Expenditure Budget Decree"). This represents the difference between its gross revenues (inflows) and its total budgeted expenditures (outflows) including the financial cost of its debt, which is proposed by the SHCP and approved by the Chamber of Deputies. The Federal Budget for 2022 authorized PEMEX to have a negative financial balance budget of Ps. 62,750,000. This shortfall does not consider payments of principal of PEMEX's debt due in 2022. PEMEX has short-term debt principal maturities (including interest payable) of Ps.492,283,613 as of December 31, 2021.

The combined effect of the above-mentioned events indicates substantial doubt about PEMEX's ability to continue as a going concern.

Actions-

PEMEX and the Mexican Government are carrying out the following actions, among others, to preserve liquidity:

PEMEX has requested to receive scheduled equity contributions from the Mexican Government during 2022 and 2023, through the Ministry of Energy, which are subject to changes in the main reference variables used in the preparation of PEMEX's 2022 budget, and the financial capacity of the Federal Government. The resources from these contributions will be used to pay the 2022 and 2023

short-term maturities. PEMEX has received Ps. 45,437,538 as of March 31, 2022 for this purpose. Given the current scenario of high international prices in oil and its derivatives, along with the Mexican Government policy of keeping the public prices of gasoline below inflation, PEMEX's operating income may be affected and equity contributions to PEMEX could be compromised. This situation is mitigated by the application of the tax credit decree, published on March 4, 2022, which will allow Pemex to substantially recover the value of the difference between the sale price and its international reference price.

It is expected that PEMEX will be subject to a lower tax burden in 2022 and 2023, since the profit-sharing duty rate decreased to 40% in 2022 from 54% in 2021.

In addition, PEMEX may raise funds from the markets in accordance with prevailing conditions, to refinance its debt.

Further, PEMEX has the capacity to refinance its short-term debt maturities through direct loans and revolving credit facilities and loans guaranteed by export credit agencies. PEMEX also established in conjunction with development and commercial banks Cadenas Productivas PEMEX Plus (Productive Chains Plus Program) to aid for the payment to suppliers and contractors.

The Revenue Law for 2022 also authorized PEMEX to incur a net additional indebtedness up to Ps. 65,000,000 (Ps. 27,242,000 and U.S. $1,860,000), which is considered as public debt by the Mexican Government and may be used to partially cover its negative financial balance.

PEMEX reviews and aligns its capital expenditures portfolio in accordance with updated economic assumptions on a periodic basis and giving priority to those projects which increase production in an efficient manner and at the lowest cost.

Further, on March 22, 2021, the Board of Directors of Petróleos Mexicanos approved the business plan of Petróleos Mexicanos and its Subsidiary Companies for 2021-2025 (the "2021-2025 Business Plan").

Prices of crude oil, natural gas and petroleum products have begun to recover in the first months of 2022, and economic activity has begun to increase.

Petróleos Mexicanos and its Subsidiary Entities are not subject to the Commercial Bankruptcy Law of Mexico and none of PEMEX's existing financing agreements include any financial covenants that could lead to the demand for immediate payment of its debt due to having negative equity or non-compliance with financial ratios.

As a reference, PEMEX prepared its consolidated financial statements as of December 31, 2021 and 2020 on a going concern basis. There are certain conditions that have generated important uncertainty and significant doubts concerning the entity's ability to continue operating, including recurring net losses, negative working capital and negative equity. Those financial statements do not contain any adjustments that would be required if they were not prepared on a going concern basis.

G. Non-controlling interest

Until April 2020, the non-controlling interest in HJ BARRERAS was also presented. In May 2020, PMI HBV, a majority shareholder of HJ BARRERAS, transferred to Cruise Yacht Yard Co, Ltd, a company belonging to the acquirer of the vessel under construction by HJ BARRERAS, the corporate and economic rights derived from its 51.0 % of shareholding in HJ BARRERAS, through the conclusion of various contracts (i) of usufruct of shares, and (ii) shares purchase and share sale options, in exchange for a net amount of € 5,100 (Ps. 134,716). To ensure that PMI HBV did not pay the penalty arising from a guarantee granted by HJ BARRERAS shareholders, Cruise Yacht Yard Co, Ltd, assumed payment of the latter and its value was included in the total price of the assets (advance amounts) amounting to € 8,400.

PMI HBV's payment of the guarantee gave a right of recovery that becomes a participatory loan for HJ BARRERAS. As of the payment, the expiration period of the options for the purchase and sale of the shares between the two parties may take place on January 1, 2022, or earlier when the construction of that vessel is completed.

Therefore, as of May 2020, PMI HBV does not maintain control over HJ BARRERAS and Petróleos Mexicanos does not consolidate HJ BARRERAS' financial information in its financial statements.

As of April 30, 2020, HJ BARRERAS' total assets amounted to Ps. 1,558,000; total liabilities amounted to Ps. 2,945,300, respectively; and negative capital (of which 49.0% corresponded to non-controlling interest) amounted to Ps. 1,387,300. The negative capital amount as of April 30, 2020 included Ps. 224,500 of losses generated by HJ BARRERAS during the period from January 1 to April 30, 2020 (of which 49.0% corresponded to the non-controlling interest). This operation resulted in a profit in the consolidated income statement of Ps. 833,038.

On July 31, 2020, Cruise Yacht Yard Co, Ltd exercised its purchase and sale option.

PEMEX does not currently own all of the shares of PMI CIM and COMESA, variations in income and equity from these entities are also presented in the consolidated statements of changes in equity (deficit) as "non-controlling interest."

As of December 31, 2021, 2020 and 2019 non-controlling interest represented losses of Ps. 128,502, Ps. 369,692 and Ps.141,793, respectively, in PEMEX's equity (deficit).

NOTE 23. COST AND EXPENSES BY NATURE

Cost and expenses by nature for each of the years ended December 31, 2021, 2020 and 2019, was as follows:

	2021	2020	2019
Purchases	Ps. 518,434,795	Ps. 386,040,047	Ps. 600,657,759
Net periodic cost of employee benefits	140,215,404	128,808,540	116,176,949
Depreciation of wells, pipelines, properties, plant and equipment, depreciation of rights of use and amortization of intangible assets	140,155,507	137,398,830	145,159,657
Personnel services	100,401,001	103,044,657	101,252,318
Exploration and Extraction Hydrocarbons Duty and taxes	88,596,015	43,593,642	67,106,181
Associated costs in crude oil processing[1]	72,840,444	—	—
Conservation and maintenance	65,239,995	69,939,632	65,640,388
Unsuccessful wells	26,952,138	22,269,583	76,279,192
Raw materials and spare parts	23,504,046	18,381,313	22,729,422
Other operation taxes and duties	12,933,825	12,180,579	12,764,473
Auxiliary services with third-parties	9,656,254	15,901,982	19,492,638
Other operation costs and expenses	7,521,387	25,031,177	12,711,674
Insurance	6,997,343	6,068,497	5,821,020
General expenses with third-parties[2]	6,867,868	—	—
Losses from fuels subtraction[3]	6,791,377	4,279,542	4,644,846
Exploration expenses	6,458,310	6,732,689	10,942,558
Freight	5,195,157	3,426,079	3,197,421
Integrated Contracts	4,904,774	5,275,946	9,947,983
Inventory variations[4]	(11,544,077)	2,572,641	1,063,678
Total cost of sales and general expenses.....	**Ps. 1,232,121,563**	**Ps. 990,945,376**	**Ps. 1,275,588,157**

(1) This line item was included beginning in 2021 to better present cost and expenses. During 2020 and 2019, this line item amounted to Ps. 42,793,329 and Ps. 53,102,043, respectively.

(2) This line item was included beginning in 2021 to better present cost and expenses. During 2020 and 2019, this line item amounted to Ps. 4,198,747 and Ps. 5,783,283, respectively.

(3) In accordance with Resolution RES / 179/2017, issued by the CRE, losses from fuels subtraction are losses outside the scope of the contemplated operating costs as a result of various illicit actions, including the theft of and illicit market in fuels.

Pemex Logistics is responsible for distributing hydrocarbons through the pipelines and for the received products, preserving their quality and delivering them from the point of reception to the user at the point of destination. Pemex Logistics determines the volume of missing hydrocarbons through monthly calculations.

(4) The variation in inventories represents the difference between the balances as of the beginning and the end of the year, as well as variations in standard and real costs. During 2021, the variation was mainly due to the increase in crude oil prices.

NOTE 24. OTHER REVENUES AND OTHER EXPENSES

Other revenues and expenses-net for each of the years ended December 31, 2021, 2020 and 2019, was as follows:

a) Other revenues

	2021	2020	2019
Other income for services	Ps. 4,126,750	Ps. 2,420,939	Ps. 1,994,572
Other income	3,028,394	3,551,636	3,418,551
Recognition of partial income[1]	2,756,680	—	—
Funds from FONADIN[2]	1,674,225	—	—
Insurance and deposits[3]	1,459,760	—	—
Bidding terms, sanctions, penalties and other	1,429,152	1,170,632	1,503,437
Claims recovery	1,147,424	1,515,295	2,687,258
Tax updates[4]	915,277	—	—
Account debugging[5]	523,365	—	—
Franchise fees	376,179	494,785	389,730
Revenues from reinsurance premiums	110,994	2,534,466	4,869,266
Gain on sale of fixed assets	52,266	50,215	77,633
Participation rights[6]	—	30,878	—
Total other revenues	Ps. 17,600,466	Ps. 11,768,846	Ps. 14,940,447

(1) Recognition of partial income, amid deferred remediation agreement in favor of Petróleos Mexicano to be settled by November 2023.

(2) On June 11, 2021, PEMEX was authorized by the Fondo Nacional de Infraestructura ("FONADIN") for a non-recoverable contribution to continue with the "Exploitation of wastewater" development project at the Miguel Hidalgo refinery, for the payment of executed work and for the associated expenses including pending estimated payments, expenses and invenstments related to the executed work in the amount of Ps. 4,399,765. The total non-recoverable contribution from the FONADIN was Ps. 6,073,990, of which Ps. 1,674,225 was recognized in 2021 as other income. Pemex recognized the non-recoverable contribution as deferred income and it will be recognized over the useful life of the asset from the non-recoverable contribution; this useful life is estimated at 20 years. There are no conditions or contingencies linked to the non-recoverable conribution from FONADIN since the expenditure and capitalization has already been accrued.

(3) This line item was included beginning in 2021 to better present other revenues. During 2020 and 2019, this line item amounted to Ps. 2,149 and Ps. 0, respectively.

(4) This line item was included beginning in 2021 to better present other revenues. During 2020 and 2019, this line item amounted to Ps. 6,996 and Ps. 0, respectively.

(5) This line item was included beginning in 2021 to better present other revenues. During 2020 and 2019, this line item amounted to Ps. 485,562 and Ps. 0, respectively.

(6) Relates to rights participate of EECs, for which the operators of the EECs guarantee their participation in such contracts.

b) Other expenses

	2021	2020	2019
Loss from derecognition of disposal of assets[1]	Ps. (45,185,031)	Ps. (351,010)	Ps. (2,413,776)
Other expenses	(3,058,504)	(436,723)	(4,602,210)
Claims	(2,670,560)	(376,697)	(173,414)
Fines	(55,001)		
Transportation and distribution of natural gas	—	(30,284)	(22,291)
Total other expenses	Ps. (50,969,096)	Ps. (1,194,714)	Ps. (7,211,691)

(1) For 2021, includes mainly fixed assets from Pemex Exploration and Production without future development plans.

NOTE 25. RELATED PARTIES

The balances and transactions with related parties are mainly due to: (i) the sale and purchase of products, (ii) the billing of administrative services, and (iii) financial loans between related parties.

Directors and employees of Petróleos Mexicanos and the Subsidiary Entities are subject to regulations related to conflict of interest such as the Petróleos Mexicanos Law, *Ley Federal de Responsabilidades Administrativas de los Servidores Públicos* (Federal Law of Administrative Responsibilities of Public Officials) and the *Políticas y Lineamientos Anticorrupción para Petróleos Mexicanos, sus Empresas Productivas Subsidiarias y, en su caso, Empresas Filiales* (Anticorruption Policies and Guidelines for Petróleos Mexicanos, its Subsidiary Productive Companies and, where applicable, Subsidiary Companies). Under these provisions, PEMEX's directors and employees are obligated to "recuse themselves from intervening in any way in the attention to, processing or resolution of matters in which they might have personal, family or business interest, including those where some benefit can result for themselves, their spouse, blood or affinity relatives up to the fourth degree, or civil relatives, or for third parties with which they have professional, labor or business relations, or for partners or partnerships where the public officials or the persons referred above are or have been members thereof."

Related parties include individuals and companies that do not form part of PEMEX, but that could take advantage of being in a privileged position as a result of their relation with PEMEX. Also included are situations in which PEMEX could take advantage of a special relationship in order to benefit its financial position or results of operations.

Main operations identified by PEMEX with this kind of directors and officers are as follows:

Mr. Manuel Bartlett Díaz, Chief Executive Officer of CFE, was appointed member of the Board of Directors of Petróleos Mexicanos in December 2018. CFE has executed several purchase agreements with Pemex Industrial Transformation. During 2021, CFE acquired the following products from Pemex Industrial Transformation:

Product		2021
Heavy fuel oil	Ps.	15,548,441
Industrial diesel		7,005,847
Other		903,942
Fuel oil		511,130
Transport of Natural Gas		527,443
Natural Gas		150,550
Freights		284
Total	**Ps.**	**24,647,637**

As of December 31, 2021, CFE owed Pemex Industrial Transformation a total amount of Ps. 3,767,664. Invoices are payable between 16 and 60 days.

A. Compensation of Directors and Officers

For the years ended December 31, 2021, 2020 and 2019, short-term benefits of executive officers of Petróleos Mexicanos and the Subsidiary Entities paid or accrued in that year for services in all capacities was approximately Ps. 34,360, Ps. 30,988 and Ps. 30,988, respectively. Retirement post-employment and long-term employee benefits are granted as follows:

	As of December 31,		
	2021	2020	2019
Retirement	Ps. 4,888	7,233	15,549
Post-employment	200	354	349
Long-term	2,468	3,702	2,698
	Ps. 7,556	11,289	18,596

Except in the case of the professional members, members of the Boards of Directors of Petróleos Mexicanos and the Subsidiary Entities do not receive compensation for their services.

The compensation paid or accrued during 2021, 2020 and 2019, to the professional members of the Board of Directors of Petróleos Mexicanos and boards of directors of the existing Subsidiary Entities was approximately Ps. 7,646, Ps. 6,008 and Ps. 5,985, respectively.

B. Compensation and benefits

As an employee benefit, PEMEX offers salary advances to all of its eligible Petroleum Workers' Union and non-union workers, including executive officers, pursuant to the programs set forth in the collective bargaining agreement and in the *Reglamento de Trabajo del Personal de Confianza de Petróleos Mexicanos y Empresas Productivas Subsidiarias* (Employment Regulation of White Collar Employees of Petróleos Mexicanos and Subsidiary Entities), respectively. The salary advances, which are non-interest bearing, are offered to each eligible employee in an amount up to a maximum of four months' salary and are repaid through salary deductions in equal installments over a period of either one or two years, as elected by the employee. Most employees take advantage of this benefit. The amount of salary advances outstanding to executive officers at December 31, 2021 and 2020 was Ps. 265 and Ps. 893, respectively. The amount of salary advances outstanding to executive officers at March 31, 2022 was Ps. 168.

NOTE 26. COMMITMENTS

A. PMI CIM has entered into several contracts for the sale of crude oil on the international market to foreign companies. The terms and conditions of these contracts are specific to each client, and their durations may be indefinite (evergreen contracts) or they may contain a minimum obligatory period (long-term contracts).

B. PEMEX has entered into a nitrogen supply contract for the pressure maintenance program at the Cantarell complex. During 2007, an additional contract was entered into with the purpose of supplying nitrogen to the Ku-Maloob-Zap complex and extending the original contract until 2027. At December 31, 2021 and 2020, the value of the nitrogen to be supplied during the term of the contract was approximately U.S.$ 1,451,362 and U.S.$ 1,617,167, respectively. In the event of the annulment of the contract and depending on the circumstances, PEMEX has the right or the obligation to acquire the vendor's nitrogen plant under the terms of the contract.

Estimated future payments under this contract for upcoming fiscal years are as follows:

2022	U.S.$	260,064
2023		263,825
2024		265,561
2025		265,389
2026		266,240
2027 and thereafter		130,283
Total	**U.S.$**	**1,451,362**

C. As of December 31, 2021, PEMEX had entered into FPWCs by means of which the contractor manages and is responsible for financing performance of the work to be undertaken.

As of December 31, 2021 and 2020, the estimated value of these contracts was as follows:

Maturity	2021	2020
Up to 1 year	Ps. 488,438	Ps. 1,046,436
1 to 3 years	294,662	1,339,040
4 to 5 years	—	376,916
Total	**Ps. 783,100**	**Ps. 2,762,392**

D. As of December 31, 2021 and 2020, the estimated value of the contracts that PEMEX has entered into with several contractors for the development of various infrastructure and services works was as follows:

Maturity		2021		2020
Up to 1 year	Ps.	181,088,750	Ps.	39,162,033
1 to 3 years		177,187,792		274,421,535
4 to 5 years		124,716,836		23,055,268
More than 5 years		22,643,024		37,518,571
Total	**Ps.**	**505,636,402**	**Ps.**	**374,157,407**

NOTE 27. CONTINGENCIES

In the ordinary course of business, PEMEX is named in a number of lawsuits of various types. PEMEX evaluates the merit of each claim and assesses the likely outcome. PEMEX has not recorded provisions related to ongoing legal proceedings due to the fact that an unfavorable resolution is not expected in such proceedings, with the exception of the proceeding described in further detail in this Note.

PEMEX is involved in various civil, tax, criminal, administrative, labor and commercial lawsuits and arbitration proceedings. The results of these proceedings are uncertain as of the date of these consolidated financial statements. As of December 31, 2021 and December 31, 2020, PEMEX had accrued a reserve of Ps. 11,114,006 and Ps. 8,321,816, respectively, for these contingent liabilities.

As of December 31, 2021, the current status of the principal lawsuits in which PEMEX is involved is as follows:

- On April 4, 2011, Pemex Exploration and Production was summoned before the *Séptima Sala Regional Metropolitana* ("Seventh Regional Metropolitan Court") of the *Tribunal Federal de Justicia Fiscal y Administrativa* ("Tax and Administrative Federal Court") in connection with an administrative claim (No. 4957/11-17-07-1) filed by EMS Energy Services de México, S. de R.L. de C.V. and Energy Maintenance Services Group I. LLC requesting that Pemex Exploration and Production's termination of the public works contract be declared null and void. In a concurrent proceeding, the plaintiffs also filed an administrative claim (No. 13620/15-17-06) against Pemex Exploration and Production before the *Sexta Sala Regional Metropolitana* ("Sixth Regional Metropolitan Court") of the Tax and Administrative Federal Court in Mexico City seeking damages totaling U.S. $193,713 related to the above-mentioned contract. Pemex Exploration and Production filed a response requesting the two administrative claims be joined in a single proceeding, which was granted. On April 30, 2019, a judgment was issued by the *Segunda Seccion de la Sala Superior* ("Second Section of the Superior Court") in favor of Pemex Exploration and Production. On June 25, 2019, the plaintiffs filed an amparo (D.A. 397/2019) before the *Tercer Tribunal Colegiado en Materia Administrativa del Primer Circuito* ("Third Administrative Joint Court of the First Circuit"), which was granted. On March 12, 2020, Pemex Exploration and Production filed a motion to review against the resolution granting this amparo before the Third Administrative Joint Court of the First Circuit. On October 1, 2020, the Third Administrative Joint Court declared the resolution null and void, among others. Pemex Exploration and Production filed an amparo which was admitted. A motion was filed to draw the resolution by the Suprema Corte de Justicia de la Nación (Supreme Court of Justice of the Nation), which was rejected. The file was sent to the Joint Court to resolve the amparo. A final resolution is still pending as of the date of these financial statements.
- On February 6, 2019, the Sala Regional del Golfo Norte (North Gulf Regional Court) of the Tax and Administrative Federal Court summoned Pemex Drilling and Services (now Pemex Exploration and Production) in connection with a claim (752/17-18-01-7) filed by Micro Smart System de Mexico, S. de R.L. de C.V. ("Micro Smart System"), challenging a settlement statement dated March 14, 2017, related to a works contract number 424049831 dated December 9, 2009, seeking the payment of: U.S. $240,448 for work performed and U.S. $284 for work estimates. On May 8, 2019, a response to this claim was admitted and evidence was filed by Pemex Exploration and Production. On July 1, 2019, the Second Section of the Superior Court was instructed to review the claim. On September 24, 2019, the plaintiff filed its pleadings. On February 13, 2020, the Second Section of the Superior Court declared that the plaintiff partially proved its claim and no payments shall be made by the defendant. On September 8, 2020, the judgment was published in the *Gaceta Judicial* ("Jurisdictional Gazette"). On September 29, 2020, Pemex Exploration and Production filed a motion to clarify this judgment, which was granted on November 24, 2020 and notified on December 10, 2020. On October 2, 2020 the plaintiff filed an amparo against this judgment. On June 11, 2021, the court approved Micro Smart System's motion filed on June 9, 2021, which requested that the court deny the entry of Pemex Exploration and Production's expert. On June 17, 2021, Pemex Exploration and Production filed a motion seeking to declare the inadmissibility of Micro Smart System's prior motion. On September 30, 2021, the Third Joint Administrative Court held a meeting and denied the amparo. Therefore, the judgment in favor of Pemex Exploration and Production is

definitive. On October 26, 2021, the resolutions issued on October 15 and 19, 2021 are notified in which, among other, the amparo filed by Micro Smart System is denied. Therefore, the judgment issued on February 13, 2020, declaring the payment requested by Micro Smart System improper, was ratified.

- On October 18, 2019, the *Sala Regional Peninsular* ("Regional Peninsular Court") of the *Tribunal Federal de Justicia Administrativa* ("Federal Justice Administrative Court") in Mérida, Yucatán summoned Pemex Exploration and Production in connection with a claim (91/19-16-01-9) filed by PICO México Servicios Petroleros, S. de R.L. de C.V. requesting that Pemex Exploration and Production's termination of the public works contract (no. 428814828) be declared null and void and seeking U.S. $137,300 for expenses and related damages, among other claims. On December 12, 2019, Pemex Exploration and Production filed a response to this claim. On March 28, 2020, a notification dated February 10, 2020, was received in which the extended claim was admitted. On February 10, 2020, the expert appointed by the plaintiff was accepted. On February 18, 2020, an extension requested by the accounting expert appointed by Pemex Exploration and Production was accepted and his opinion was filed and ratified on August 11, 2020. On June 1, 2020, an independent expert was designated. On September 30, 2021, a resolution was issued, which declared that all evidence has been filed. On October 15, 2021, the parties filed their pleadings. On November 9, 2021, this stage is closed. As of the date of these financial statements, a final resolution is still pending to be filed.
- Compañía Nitrógeno de Cantarell, S.A. de C.V. (CNC) filed an arbitration proceeding before the International Court of Arbitration of the International Chamber of Commerce (25306/JPA) against Pemex Exploration and Production seeking initially U.S. $70,000 which was increased to U.S. $146,000 for nitrogen supply services performed. On August 24, 2021, a final award was issued in which Pemex Exploration and Production was required to pay to CNC: (i) U.S.$146,114 for due fixed changes as of July 12, 2021; (ii) U.S.$5,802, for accrued default interests as of July 12, 2021; (iii) U.S.$393 for fees and expenses of the Arbitration Court; and (iv) U.S.$1,500 plus the Value Added Tax for legal fees and expenses of CNC. Pemex Exploration and Production is completing the applicable processes to fulfill these payments.
- Tech Man Group, S.A. de C.V. filed an administrative claim (7804/18-17-09-8) against Pemex Industrial Transformation seeking Ps. 2,009,598 for, among other things, payment of expenses and penalties in connection with a public works contract (CO-OF-019-4008699-11) before the *Tribunal Fiscal de Justicia Administrativa* (Fiscal Court of Administrative Justice). On June 25, 2019, a response was filed by Pemex Industrial Transformation as well as a motion against the admission of the claim, which was accepted. On October 2, 2019, the opinion of the accounting and construction experts submitted by the defendant was filed. On February 17, 2020, Pemex Industrial Transformation requested the *Tribunal Fiscal de Justicia Administrativa* (Fiscal Court of Administrative Justice) to appoint a new accounting expert since the previous appointed expert rejected his designation. On March 2, 2020, the independent construction expert filed his opinion. On August 7, 2020, the *Novena Sala Regional Metropolitana* (Ninth Regional Metropolitan Court) of the Federal Justice Court appointed an independent accounting expert, who filed his report on December 7, 2020. The parties also filed their pleadings. As of the date of these financial statements, a final resolution is still pending.
- Constructora Norberto Odebrecht, S.A. filed an administrative claim against Pemex Industrial Transformation (file No. 4742/19-17-01-7) seeking U.S. $113,582 and Ps. 14,607 in connection with a termination resolution (no. 1,757) dated January 14, 2019, and issued by Pemex Industrial Transformation, which awarded U.S. $51,454 in favor of Pemex Industrial Transformation. The claim was admitted. On November 11, 2020, Pemex Industrial Transformation filed a response to this claim. The accounting expert filed his opinion. As of the date of these financial statements, a final resolution is still pending.
- On November 24, 2021, Pemex Industrial Transformation filed a repeal request (no. RRL2021014568) seeking that the resolutions dated October 7, 2021, issued by the Hydrocarbons Verification Manager of the Tax Administration Service are declared null and void. These resolutions established charges for Special Taxes on Production and Services, Value Added Taxes, fines among other for an amount of Ps. 3,084,975. As of the date of these financial statements, a final resolution is still pending.

The results of these proceedings are uncertain until their final resolutions are issued by the appropriate authorities. PEMEX has recorded liabilities for loss contingencies when it is probable that a liability has been incurred and the amount thereof can be reasonably estimated. When a reasonable estimation could not be made, qualitative disclosure was provided in the notes to these consolidated financial statements. PEMEX does not disclose amounts accrued for each individual claim because such disclosure could adversely affect PEMEX's legal strategy, as well as the outcome of the related litigation.

Pursuant to an ordinary session held by the Board of Directors on August 23, 2013, Petróleos Mexicanos established policies for the granting of mutual guarantees, loans or any type of credit in favor of the Subsidiary Entities and Subsidiary Companies; in accordance with these policies, the Corporate Finance Department issues an opinion with its risk analysis, financial valuation, budget sufficiency, accounting treatment and conclusions.

Additionally, Pemex Logistics has granted the following corporate guarantees in connection with the exploration and extraction contracts entered into by Pemex Exploration and Production, as required by the CNH:

- Exploration and extraction of hydrocarbons under the deep-water license modality, Trión field (Tender CNH-A1-TRION / 2016), of U.S. $4,000,000.
- Exploration and extraction of the contract area 3 Cinturón plegado perdido (Tender CNHR01- L04 / 2015), of U.S. $3,333,000.
- Extraction of hydrocarbons under shared production contract of the Ek-Balam fields, of U.S. $5,000,000.
- Extraction of hydrocarbons in contractual area Santuario and El Golpe 3 field, of U.S. $320,000.
- Exploration and extraction of hydrocarbons under shared production contract, contractual area 2 Tampico-Misantla, of U.S. $1,250,000.
- Exploration and extraction of hydrocarbons under shared production contract, contractual area 8 Cuencas del Sureste, of U.S. $1,250,000.
- Exploration and extraction of hydrocarbons shared production contract, assignment AE-0398-Mission of U.S. $255,000.
- Extraction of hydrocarbons under license agreement, Ogarrio field of U.S. $250,000.
- Extraction of hydrocarbons under license agreement, Cárdenas and Mora fields, of U.S. $250,000.
- Exploration and extraction of hydrocarbons under the deep-water license modality, contractual area 2 Perdido, of U.S. $2,500,000.
- Exploration and extraction of hydrocarbons under the deep-water license modality, contractual area 5 Perdido, of U.S. $5,000,000.
- Exploration and extraction of hydrocarbons under the deep-water license modality, contractual area 18 Cordilleras Mexicanas, of U.S. $5,000,000.
- Exploration and extraction of hydrocarbons under shared production contract contractual area 22 Cuenca Salina, of U.S. $1,375,000.
- Contractual area 16 Tampico-Misantla, Veracruz, of U.S. $1,000,000.
- Contractual area 17 Tampico-Misantla, Veracruz, of U.S. $1,000,000.
- Contractual area 18 Tampico-Misantla, Veracruz, of U.S. $2,000,000.
- Contractual area 29 Cuencas del Sureste, of U.S. $2,500,000.
- Contractual area 32 Cuencas del Sureste, of U.S. $1,250,000.
- Contractual area 33 Cuencas del Sureste, of U.S. $1,250,000.
- Contractual area 35 Cuencas del Sureste, of U.S. $1,250,000.
- Contractual area Ébano, of U.S. $225,000.
- Contractual area AE-0388-M-Miquetla (for conventional and non-conventional on-shore licenses) of U.S. $245,000.

Certain other Subsidiary Entities have also granted guarantees and other contingencies.

Total guarantees granted to Pemex Exploration and Production amounted to U.S. $40,503,000, equivalent to Ps. 833,693,500, as of December 31, 2021 at the closing exchange rate on December 31, 2021, of Ps. 20.5835 = U.S. $1.00.

As of December 31, 2020, Pemex Logistics granted to Pemex Industrial Transformation the obligations from a lease contract for U.S. $150,000, equivalent to Ps. 3,087,525 at the closing exchange rate on December 31, 2021, of Ps. 20.5835=U.S. $1.00, to J. Aron & Company LLC, a subsidiary of Goldman Sachs Group Inc.

PEMEX considers the probability it needs to make a disbursement of cash, for the guarantees granted and in effect as of December 31, 2021 remote.

NOTE 28. SUBSEQUENT EVENTS

A. Indebtedness for 2022

The Federal Revenue Law applicable to PEMEX as of January 1, 2022, published in the Official Gazette of the Federation on November 12, 2021, authorized Petróleos Mexicanos and its Subsidiary Entities to incur a domestic net debt up to Ps. 27,242,000 and an external net debt up to U.S. $1,860,000. PEMEX can incur additional domestic or external debt, as long as the total amount of net debt does not exceed the ceiling established by the Federal Revenue Law.

B. Recent financing activities

- On January 14, 2022, P.M.I. SUS, as borrower, and Petróleos Mexicanos, as guarantor, entered into a U.S. $500,000 credit facility maturing in 2023, which bears interest at a floating rate linked to SOFR plus 275 to 425 basis points.
- On January 21, 2022, Petróleos Mexicanos, issued Ps. 4,500,000 and U.S. $250,000 in aggregate principal amount of promissory notes as follows:
  - Ps. 2,000,000 for a term of 270 days, at a rate linked to TIIE plus 228 basis points;
  - Ps. 2,500,000 for a term of 360 days, at a rate linked to TIIE plus 238 basis points;
  - U.S. $ 100,000 for a term of 90 days, at a rate linked to LIBOR plus 198 basis points; and
  - U.S. $150,000 for a term of 180 days, at a rate linked to LIBOR plus 208 basis points.
- On February 22, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 5,000,000 bearing an interest rate linked to TIIE plus 260 basis points, maturing in August 2022.
- On February 25, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of U.S. $11,362 bearing an interest rate linked to LIBOR plus 175 basis points, maturing in August 2022.
- On February 25, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 250,000, bearing an interest rate linked to TIIE plus 235 basis points, maturing in February 2023.
- On March 16, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 4,000,000, bearing an interest rate linked to TIIE plus 220 basis points, maturing in June 2022.
- On March 17, 2022, Petróleos Mexicanos issued a promissory note for the principal amount of Ps. 4,000,000, bearing an interest rate linked to TIIE plus 280 basis points, maturing in September 2022.
- On March 31, 2022, Petróleos Mexicanos entered into a credit line in the amount of U.S. $75,000 due January 2023, at a floating rate linked to SOFR plus 245 basis points.
- On March 31, 2022, Petróleos Mexicanos implemented a financial factoring transaction to support its suppliers for an amount of Ps. 1,305,951 for 180 days at the TIIE at a rate betweeen 255 to 280 basis points.
- On April 6, 2022, Petróleos Mexicanos entered into a credit line in the amount up to U.S. $150,000 due June 2022, at a floating rate linked to SOFR plus 270 basis points.
- On April 18, 2022, Petróleos Mexicanos renewed a promissory note for Ps. 4,000,000, originally issued in October 2021, bearing interest at a floating rate linked to the 28-day TIIE plus 315 basis points, maturing in January 2023.
- On April 21, 2022, Petróleos Mexicanos renewed a promissory note, originally issued in January 2022, for U.S. $100,000, bearing interest at a floating rate linked to 6-month SOFR plus 208 basis points and an adjustment margin of 42.826 basis points, maturing in October 2022.

On March 30, 2022, Petróleos Mexicanos completed the exchange of Notes previously issued under Rule 144-A and under Regulation S by registered Notes before the SEC. The following table sets forth, as of March 31, 2022, the principal amount outstanding of the registered debt securities issued by Petróleos Mexicanos, and guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics.

Security	Issuer	Guarantors	Principal amount outstanding (U.S. $)
6.875% Notes due 2025	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	901,836
6.700% Notes due 2032	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	6,779,842

As of December 31, 2021, the outstanding amount under the PMI Trading revolving credit line was U.S. $2,310,042. From January 1 to April 18, 2022, PMI Trading obtained U.S. $4,841,599 from its revolving credit line and repaid U.S. $4,719,135. As of April 18, 2022, the outstanding amount under this revolving credit line was U.S. $2,432,506.

As of April 22, 2022, PEMEX had U.S. $7,664,000 and Ps. 37,000,000 in available credit lines in order to provide liquidity, which are fully drawn.

C. Russian activities in Ukraine and the related destabilization of the world energy markets.

PEMEX's revenues and profitability are heavily dependent on the prices it receives from sales of oil and natural gas. Oil prices are particularly sensitive to actual and perceived threats to global political stability and to changes in production from OPEC member states. An actual increase, or the threat of an increase, in Russian activities in Ukraine could lead to increased volatility in global oil and gas prices. Destabilization of global oil and gas prices could reduce the price received from PEMEX's sales of oil and natural gas and adversely affect PEMEX's results and profitability. Increases in oil and gas prices may not persist and could be followed by price decreases based on factors beyond PEMEX's control, including geopolitical events.

D. Exchange rates and crude oil prices

As of April 22, 2022, the Mexican peso-U.S. dollar exchange rate was Ps. 20.0383 per U.S. dollar, which represents a 2.6% appreciation of the value of the peso in U.S. dollar terms as compared to the exchange rate as of December 31, 2021, which was Ps. 20.5835 per U.S. dollar. This decrease in U.S. dollar exchange rate, has led to an estimate of Ps. 51,061,149 in PEMEX's foreign exchange gains as of April 22, 2022.

As of April 22, 2022, the weighted average price of the crude oil exported by PEMEX was U.S. $100.21 per barrel. This represents a price increase of approximately 40.6% as compared to the average price as of December 31, 2021, which was U.S. $71.29 per barrel.

E. Contributions from the Mexican Government

During the period from January 1 to April 22, 2022, the Mexican Government made certain contributions to Petróleos Mexicanos through the Ministry of Energy. These amounts are reflected in the table below:

Date	Payment of debt	Construction of the Dos Bocas Refinery
January 21	Ps. 19,321,641	—
January 21	—	7,500,000
February 14	—	7,500,000
March 8	26,115,897	—
March 8	—	7,500,000
Total	**Ps. 45,437,538**	**22,500,000**

F. Business acquisition

On January 20, 2022, PMI SUS acquired the remaining 50.005% of participation in Deer Park through a purchase agreement with Shell, therefore becoming owner of Deer Park. Through this operation, PEMEX indirectly acquired control over Deer Park. As a result of the acquisition, this company is now consolidated in PEMEX's financial statements (see note 12).

Deer Park is a limited partnership under the Law of Delaware, with operations in Deer Park, Texas. The purpose of the acquisition is to strengthen and increase the refining capacity under PEMEX's control.

Prior to the acquisition, the participation in Deer Park was recognized as a joint venture. As a result, the participation was recognized in PEMEX's consolidated financial statements using the equity method.

On November 3, 2021, the Board of Directors authorized PEMEX's capitalization of HHS and HPE up to the amount received from the FONADIN as a non-recoverable contribution to enable HHS and HPE, in turn, to capitalize PMI NASA and PMI SUS. These capitalizations were used to meet financial commitments arising out of the acquisition of Shell's interest in Deer Park. In January 2022, the amount received and recorded from the FONADIN totaled Ps. 23,000,000 (U.S.$ 1,119,247). In addition PEMEX entered into a borrowing of Ps. 8,974,406 (U.S. $436,000) due in 90 days.

In recognition of this transaction, PEMEX is in the process of applying the purchase method in accordance with International Financial Reporting Standard (IFRS) 3 "Business Combinations", accounting for the transaction as a phased acquisition.

Consideration transferred

PEMEX's purchase of control of Deer Park, through the of 50.005% interest owned by Shell, included the following:

Cash paid to Shell.....	U.S. $	421,396	Ps. 8,673,815
Debt to third parties.....		896,391	18,450,873
Debt to company partners		171,350	3,526,973
Total	**U.S. $**	**1,489,137**	**Ps. 30,651,661**

The transferred compensation includes cash, as well as the payment of 100% of Deer Park's third-party debt by exempting Shell from any obligations (liability) with respect to these debts and partner debt, consisting of the payment of Deer Park's domestic debt to Shell as of the acquisition date.

Values indicated above represent the fair value of the consideration transferred.

Acquisition costs

Acquisition costs for the 50% interest in Deer Park totaled U.S. $7,091 (Ps. 145,937).

Identifiable assets acquired and liabilities assumed.

At the date of issuance of these financial statements, PEMEX is in the process of determining the fair values of the acquired business, considering the relevant information available from the operation and the industry. PEMEX has not yet concluded the analysis related to the purchase allocation of appraisals for property, plant and equipment, which is in process.

The identified assets and liabilities of the acquired business largely consist of cash, inventories and properties, plant and equipment, as well as long-term financial debt.

NOTE 29. NEW STANDARDS RECENTLY ISSUED

A number of new standards are effective for annual periods beginning after January 1, 2021 and earlier application is permitted; however, PEMEX has not early adopted the new or amended standards in preparing these consolidated financial statements.

The following amended standards and interpretations are not expected to have a significant impact on the PEMEX's consolidated financial statements:

i. Applicable as of January 1, 2022

- Reference to Conceptual Framework (Amendments to IFRS 3).
- Property, Plant and Equipment: Proceeds before Intended Use (Amendments to IAS 16).

- Onerous contracts – Cost of Fulfilling a Contract (Amendments to IAS 37)
- Annual Improvements to IFRS Standards 2018–2020 (Amendments to IFRS 1, IFRS 9 and IAS 41)
- COVID-19-Related Rent Concessions beyond 30 June 2021 (Amendment to IFRS 16)

ii. Applicable as of January 1, 2023

- Insurance Contracts (Amendments to IFRS 17).
- Classification of Liabilities as Current or Non-current (Amendments to IAS 1).
- Definition of Accounting Estimates (Amendments to IAS 8)
- Disclosure of Accounting Policies (Amendments to IAS 1 and IFRS Practice Statement 2)
- Deferred Tax related to Assets and Liabilities arising from a Single Transaction (Amendments to IAS 12)

NOTE 30. SUBSIDIARY GUARANTOR INFORMATION

The following consolidating information presents: (i) condensed consolidated statements of financial position at December 31, 2021 and 2020 and condensed consolidated statements of comprehensive income and cash flows for the years ended December 31, 2021, 2020 and 2019 of Petróleos Mexicanos, the Subsidiary Guarantors and the Non-Guarantor Subsidiaries (as defined below).

These condensed consolidated statements were prepared in conformity with IFRS, with one exception: for the purposes of the presentation of the subsidiary guarantor information, the Subsidiary Entities and Subsidiary Companies have been accounted for as investments under the equity method by Petróleos Mexicanos. Earnings of subsidiaries are therefore reflected in Petróleos Mexicanos' investment account and earnings. The principal elimination entries eliminate Petróleos Mexicanos' investment in subsidiaries and inter-company balances and transactions. Pemex Exploration and Production, Pemex Industrial Transformation, Pemex Drilling and Services (merged with Pemex Exploration and Production), Pemex Logistics (collectively, the "Subsidiary Guarantors") and Pemex Ethylene (merged with Pemex Industrial Transformation) and Pemex Fertilizers (merged with Pemex Industrial Transformation) are 100%-owned subsidiaries of the Mexican Government. The guarantees by the Subsidiary Guarantors of Petróleos Mexicanos' payment obligations under this indebtedness are full, unconditional, joint and several. Pemex Ethylene, Pemex Fertilizers, and the Subsidiary Companies collectively comprise the non-guarantor subsidiaries (the "Non-Guarantor Subsidiaries").

The Pemex Project Funding Master Trust (the "Master Trust"), which was a trust formed for the purpose of financing PEMEX's projects, was dissolved effective December 20, 2011 and is no longer consolidated in the financial statements of PEMEX as of December 31, 2011 and thereafter.

The following table sets forth, as of December 31, 2021, the principal amount outstanding of the registered debt securities originally issued by the Master Trust. As noted above, Petróleos Mexicanos has assumed, as primary obligor, all of the obligations of the Master Trust under these debt securities. The obligations of Petróleos Mexicanos are guaranteed by the Subsidiary Guarantors:

Table 1: Registered Debt Securities originally issued by the Master Trust and Assumed by Petróleos Mexicanos

Security	Primary obligor	Guarantors	Principal amount outstanding (U.S. $)
6.625% Guaranteed Bonds due 2035.....	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	U.S. $ 1,750,000
6.625% Guaranteed Bonds due 2038.....	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	491,175
8.625% Bonds due 2022.....	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	89,609
8.625% Guaranteed Bonds due 2023.....	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	63,705
9.500% Guaranteed Bonds due 2027.....	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	168,625

The following table sets forth, as of December 31, 2021, the principal amount outstanding of the registered debt securities issued by Petróleos Mexicanos, and guaranteed by Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics.

Table 2: Registered Debt Securities originally issued by Petróleos Mexicanos

Security	Issuer	Guarantors	Principal amount outstanding (U.S. $)
Floating Rate Notes due 2022	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	500,448
9.500% Global Guaranteed Bonds due 2027	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	96,718
3.500% Notes due 2023	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,143,938
4.875% Notes due 2024	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	844,175
6.625% Notes due 2035	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	999,000
6.500% Bonds due 2041	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,560,521
4.875% Notes due 2022	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	639,371
5.500% Bonds due 2044	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	640,357
6.375% Bonds due 2045	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,199,747
5.625% Bonds due 2046	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	626,143
4.500% Notes due 2026	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,124,403
4.250% Notes due 2025	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	635,449
6.875% Notes due 2026	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	2,502,771
4.625% Notes due 2023	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	895,444

Security	Issuer	Guarantors	Principal amount outstanding (U.S. $)
6.750% Bonds due 2047	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	5,584,156
5.350% Notes due 2028	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,976,720
6.350% Bonds due 2048	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,574,041
6.500% Notes due 2027	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	4,006,043
5.375% Notes due 2022	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	447,340
5.950% Notes due 2031	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	3,777,381
6.490% Notes due 2027	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,538,374
6.840% Notes due 2030	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	2,345,538
6.950% Bonds due 2060	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	3,796,812
7.690% Bonds due 2050	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	8,047,831
6.500% Notes due 2029	Petróleos Mexicanos	Pemex Exploration and Production, Pemex Industrial Transformation and Pemex Logistics	1,204,708

Petróleos Mexicanos is the only PEMEX entity that had debt securities registered with the Securities and Exchange Commission ("SEC") outstanding as of December 31, 2021 and as of the date of these consolidated financial statements, and all guaranteed debt is issued by Petróleos Mexicanos. The guaranties of the Subsidiary Guarantors are full and unconditional and joint and several. PEMEX's management has not presented separate financial statements for the Subsidiary Guarantors, because it has determined that such information is not material to investors.

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF FINANCIAL POSITION
As of December 31, 2021

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Assets					
Current assets					
Cash and cash equivalents	Ps. 34,690,405	Ps. 6,157,869	Ps. 35,658,173	Ps. —	Ps. 76,506,447
Trade and other accounts receivable, derivative financial instruments and other current assets	14,502,133	191,315,372	89,956,950	—	295,774,455
Accounts receivable—inter-company	1,915,076,979	1,080,615,236	158,628,242	(3,154,320,457)	—
Inventories	930,656	54,797,831	30,384,655	—	86,113,142
Total current assets	1,965,200,173	1,332,886,308	314,628,020	(3,154,320,457)	458,394,044
Long-term receivables—intercompany	1,715,204,137	—	1,846,525	(1,717,050,662)	—
Investments in joint ventures and associates	(1,438,194,686)	172,395,250	78,073,476	1,189,980,912	2,254,952
Wells, pipelines, properties, plant and equipment-net	7,488,282	1,130,105,528	136,938,797	—	1,274,532,607
Long-term notes receivables	—	1,646,290	—	—	1,646,290
Right of use	666,839	52,047,552	1,569,067	—	54,283,458
Deferred taxes	53,898,456	34,644,220	3,713,163	—	92,255,839
Intangible assets	2,175	18,894,609	1,119,362	—	20,016,146
Mexican Government Bonds	109,601,905	—	—	—	109,601,905
Other assets	—	1,165,964	37,946,966	—	39,112,930
Total assets	**Ps. 2,413,867,281**	**Ps. 2,743,785,721**	**Ps. 575,835,376**	**Ps. (3,681,390,207)**	**Ps. 2,052,098,171**
Liabilities					
Current liabilities					
Current portion of long-term debt	Ps. 417,076,084	Ps. 22,488,458	Ps. 52,719,071	Ps. —	Ps. 492,283,613
Accounts payable—inter-company	2,092,847,395	962,430,582	98,598,958	(3,153,876,935)	—
Other current liabilities	23,587,329	334,918,246	71,859,142	—	430,364,717
Total current liabilities	2,533,510,808	1,319,837,286	223,177,171	(3,153,876,935)	922,648,330
Long-term debt	1,715,650,511	25,978,231	15,783,539	—	1,757,412,281
Long-term payables—inter-company	—	1,715,642,197	1,851,988	(1,717,494,185)	—
Employee benefits, provisions for sundry creditors, other liabilities and deferred taxes	334,835,252	1,196,413,505	10,789,586	—	1,542,038,343
Total liabilities	4,583,996,571	4,257,871,219	251,602,284	(4,871,371,120)	4,222,098,954
Equity (deficit), net	(2,170,129,290)	(1,514,085,498)	324,233,092	1,189,980,913	(2,170,000,783)
Total liabilities and equity	**Ps. 2,413,867,281**	**Ps. 2,743,785,721**	**Ps. 575,835,376**	**Ps. (3,681,390,207)**	**Ps. 2,052,098,171**

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF FINANCIAL POSITION
As of December 31, 2020

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Assets					
Current assets					
Cash and cash equivalents	Ps. 9,394,220	Ps. 4,970,074	Ps. 25,625,487	Ps. —	Ps. 39,989,781
Trade and other accounts receivable, derivative financial instruments and other current assets	46,962,377	139,800,991	50,500,929	—	237,264,297
Accounts receivable—inter-company	800,429,251	1,061,537,492	131,931,674	(1,993,898,417)	—
Inventories	889,543	41,946,007	9,770,111	—	52,605,661
Total current assets	857,675,391	1,248,254,564	217,828,201	(1,993,898,417)	329,859,739
Long-term receivables—intercompany	1,824,398,719	—	988,069	(1,825,386,788)	—
Investments in joint ventures and associates	(1,358,455,811)	45,295,025	75,662,389	1,249,513,526	12,015,129
Wells, pipelines, properties, plant and equipment-net	8,548,022	1,209,708,979	57,872,520	—	1,276,129,521
Long-term notes receivables	1,999	884,828	—	—	886,827
Right of use	759,133	56,949,499	1,486,625	—	59,195,257
Deferred taxes	59,277,027	45,431,025	3,821,147	—	108,529,199
Intangible assets	25,650	21,639,537	1,110,597	—	22,775,784
Mexican Government Bonds	111,512,962	—	—	—	111,512,962
Other assets	—	780,426	6,803,084	—	7,583,510
Total assets	**Ps. 1,503,743,092**	**Ps. 2,628,943,883**	**Ps. 365,572,632**	**Ps. (2,569,771,679)**	**Ps. 1,928,487,928**
Liabilities					
Current liabilities					
Current portion of long-term debt	334,770,935	6,642,039	49,684,293	—	391,097,267
Accounts payable—inter-company	1,360,720,755	552,292,445	78,413,852	(1,991,427,052)	—
Other current liabilities	18,629,284	325,647,266	37,036,254	—	381,312,804
Total current liabilities	1,714,120,974	884,581,750	165,134,399	(1,991,427,052)	772,410,071
Long-term debt	1,825,964,253	27,513,661	14,152,136	—	1,867,630,050
Long-term payables—inter-company	—	1,825,630,931	2,227,221	(1,827,858,152)	—
Employee benefits, provisions for sundry creditors, other liabilities and deferred taxes	368,754,587	1,315,022,188	9,398,062	—	1,693,174,837
Total liabilities	3,908,839,814	4,052,748,530	190,911,818	(3,819,285,204)	4,333,214,958
Equity (deficit), net	(2,405,096,722)	(1,423,804,647)	174,660,814	1,249,513,525	(2,404,727,030)
Total liabilities and equity	**Ps. 1,503,743,092**	**Ps. 2,628,943,883**	**Ps. 365,572,632**	**Ps. (2,569,771,679)**	**Ps. 1,928,487,928**

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF COMPREHENSIVE INCOME
For the year ended December 31, 2021

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Net sales	Ps. —	Ps. 1,815,602,641	Ps. 737,192,231	Ps. (1,062,139,493)	Ps. 1,490,655,379
Services income	83,783,182	93,096,004	11,936,130	(183,842,075)	4,973,241
Total revenues	83,783,182	1,908,698,645	749,128,361	(1,245,981,568)	1,495,628,620
(Impairment) of wells, pipelines, properties, plant and equipment	—	(751,469)	(459,126)	—	(1,210,595)
Cost of sales	939,331	1,502,101,853	728,325,768	(1,164,716,250)	1,066,650,702
Gross income	82,843,851	405,845,323	20,343,467	(81,265,318)	427,767,323
Total general expenses	77,055,697	160,027,365	9,622,354	(81,234,555)	165,470,861
Other revenues (expenses), net	2,985,438	(37,344,472)	1,009,896	(19,492)	(33,368,630)
Operating income	8,773,592	208,473,486	11,731,009	(50,255)	228,927,832
Financing cost, net	(54,245,927)	(102,785,773)	(3,907,658)	50,252	(160,889,106)
Foreign exchange (loss) income, net	(5,185,616)	(39,529,621)	(959,813)	—	(45,675,050)
(Loss) profit in joint ventures and associates	(246,891,433)	(2,353,222)	(10,630,620)	256,787,168	(3,088,107)
(Impairment) of joint ventures			(6,703,324)		(6,703,324)
(Loss) income before duties, taxes and other	(297,549,384)	63,804,870	(10,470,406)	256,787,165	12,572,245
Total taxes, duties and other	(3,017,215)	308,071,088	2,294,249	—	307,348,122
Net (loss) income for the year	(294,532,169)	(244,266,218)	(12,764,655)	256,787,165	(294,775,877)
Total other comprehensive result	44,225,180	161,981,238	6,941,577	—	213,147,995
Total comprehensive (loss) income	**Ps. (250,306,989)**	**Ps. (82,284,980)**	**Ps. (5,823,078)**	**Ps. 256,787,165**	**Ps. (81,627,882)**

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF COMPREHENSIVE INCOME
For the year ended December 31, 2020

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Net sales	Ps. —	Ps. 1,115,845,485	Ps. 459,202,040	Ps. (626,101,165)	Ps. 948,946,360
Services income	78,461,654	88,034,087	12,253,482	(174,033,739)	4,715,484
Total revenues	78,461,654	1,203,879,572	471,455,522	(800,134,904)	953,661,844
(Impairment) of wells, pipelines, properties, plant and equipment	—	(36,303,470)	(50,230)	—	(36,353,700)
Cost of sales	982,896	1,090,745,812	460,296,695	(719,410,713)	832,614,690
Gross income	77,478,758	76,830,290	11,108,597	(80,724,191)	84,693,454
Total general expenses	75,817,961	154,020,378	9,198,761	(80,706,414)	158,330,686
Other revenues (expenses), net	170,887	5,733,633	4,635,082	34,530	10,574,132
Operating income	1,831,684	(71,456,455)	6,544,918	16,753	(63,063,100)
Financing cost, net	(54,710,062)	(70,134,087)	(3,066,150)	(16,754)	(127,927,053)
Foreign exchange (loss) income, net	(1,778,917)	(125,864,355)	(1,306,032)	—	(128,949,304)
(Loss) profit sharing in joint ventures and associates	(433,417,288)	1,288,687	(12,588,491)	441,176,559	(3,540,533)
(Loss) income before duties, taxes and other	(488,074,583)	(266,166,210)	(10,415,755)	441,176,558	(323,479,990)
Total taxes, duties and other	20,804,230	159,451,307	5,316,538	—	185,572,075
Net (loss) income for the year	(508,878,813)	(425,617,517)	(15,732,293)	441,176,558	(509,052,065)
Total other comprehensive result	(6,062,096)	(12,844,301)	7,600,985	—	(11,305,412)
Total comprehensive (loss) income	**Ps. (514,940,909)**	**Ps. (438,461,818)**	**Ps. (8,131,308)**	**Ps. 441,176,558**	**Ps. (520,357,477)**

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF COMPREHENSIVE INCOME
For the year ended December 31, 2019

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Net sales	Ps. —	Ps. 1,623,118,346	Ps. 712,266,064	Ps. (942,521,905)	Ps. 1,392,862,505
Services income	59,915,165	131,935,732	9,683,190	(192,425,407)	9,108,680
Total revenues	59,915,165	1,755,054,078	721,949,254	(1,134,947,312)	1,401,971,185
(Impairment) of wells, pipelines, properties, plant and equipment	—	(27,672,704)	(3,610,450)	—	(31,283,154)
Cost of sales	989,308	1,488,250,706	705,101,991	(1,071,408,581)	1,122,933,424
Gross income	58,925,857	239,130,668	13,236,813	(63,538,731)	247,754,607
Total general expenses	62,645,185	141,628,000	11,974,223	(63,592,675)	152,654,733
Other revenues (expenses), net	139,412	3,048,907	4,616,272	(75,835)	7,728,756
Operating income	(3,579,916)	100,551,575	5,878,862	(21,891)	102,828,630
Financing cost, net	(66,593,657)	(57,364,522)	(2,953,372)	21,891	(126,889,660)
Foreign exchange (loss) income, net	3,912,176	82,143,830	874,382	—	86,930,388
(Loss) profit sharing in joint ventures and associates	(292,585,923)	116,536	(4,297,609)	295,609,103	(1,157,893)
(Loss) income before duties, taxes and other	(358,847,320)	125,447,419	(497,737)	295,609,103	61,711,465
Total taxes, duties and other	(11,557,958)	352,239,318	3,142,129	—	343,823,489
Net (loss) income for the year	(347,289,362)	(226,791,899)	(3,639,866)	295,609,103	(282,112,024)
Total other comprehensive result	(55,495,859)	(253,482,329)	(375,252)	(2,669,406)	(312,022,846)
Total comprehensive (loss) income	**Ps. (402,785,221)**	**Ps. (480,274,228)**	**Ps. (4,015,118)**	**Ps. 292,939,697**	**Ps. (594,134,870)**

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF CASH FLOWS
For the year ended December 31, 2021

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Operating activities:					
Net (loss) income	(294,532,169)	(244,266,218)	(12,764,655)	256,787,165	(294,775,877)
Income taxes and duties	(3,017,215)	308,071,088	2,294,249	—	307,348,122
Depreciation and amortization of wells, pipelines, properties, plant and equipment	926,413	130,462,150	2,042,802	—	133,431,365
Amortization of intangible assets	302,074	27,629	73,592	—	403,295
Impairment of wells, pipelines, properties, plant and equipment	—	751,469	459,126	—	1,210,595
Capitalized unsuccesful wells	—	9,730,391	—	—	9,730,391
Unsuccesful wells from intangible assets	—	12,565,711	—	—	12,565,711
Loss from derecognition of disposal of wells, pipelines, properties, plant and equipment	165,820	47,033,371	100,431	—	47,299,622
Depreciation of rights of use	518,108	4,890,459	999,304	—	6,407,871
Reversal of impairment of rights of use	—	(87,025)	—	—	(87,025)
Impairment of joint ventures	—	—	6,703,324	—	6,703,324
Cancellation of leases	—	(432,906)	—	—	(432,906)
Unrealized foreign exchange loss (income) of reserve for well abandonment	—	4,454,106	—	—	4,454,106
Loss (profit) sharing in joint ventures and associates	257,030,877	97,909	2,990,198	(257,030,877)	3,088,107
Unrealized foreign exchange loss (income)	37,103,050	4,878,103	2,504,194	—	44,485,347
Interest expense	152,735,265	9,319,042	2,517,340	—	164,571,647
Interest income	(15,021,009)	(13,696,982)	(188,793)	—	(28,906,784)
Taxes and duties	(9,832,139)	(247,468,399)	(2,147,155)	—	(259,447,693)
Accounts receivable, inventories, accounts payable, DFIs and provisions	36,095,181	(42,928,835)	(29,866,906)	—	(36,700,560)
Employee benefits	23,767,561	45,120,142	(1,001,049)	—	67,886,654
Inter-company charges and deductions	(945,742,643)	(154,191,287)	116,560,178	983,373,752	—
Cash flows from (used in) operating activities	(759,500,826)	(125,670,082)	91,276,180	983,130,040	189,235,312
Investing activities:					
Acquisition of wells, pipelines, properties, plant and equipment and intangible assets	(305,025)	(157,505,188)	(77,595,821)	—	(235,406,034)
Other assets and other receivables	435,423	4,246,730	(31,511,677)	—	(26,829,524)
(Increase) decrease due to Inter-company investing	(68,097,420)	—	(858,455)	68,955,875	—
Cash flows (used in) from investing activities	(67,967,022)	(153,258,458)	(109,965,953)	68,955,875	(262,235,558)
Financing activities:					
Increase in equity due to Certificates of Contribution "A"	316,354,129	—	—	—	316,354,129
Long-term and interest received from the Mexican Government	22,915,255	—	—	—	22,915,255
Lease payments of principal and interest	(388,290)	(9,806,074)	(1,074,067)	—	(11,268,431)
Loans obtained from financial institutions	682,975,560	4,088,422	949,152,861	—	1,636,216,843
Debt payments, principal only	(749,672,127)	(8,885,244)	(949,024,209)	—	(1,707,581,580)
Interest paid	(151,547,133)	(5,430,171)	(279,321)	—	(157,256,625)
Inter-company increase (decrease) financing	732,126,639	300,149,402	19,809,874	(1,052,085,915)	—

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Cash flows from (used in) financing activities: ...	852,764,033	280,116,335	18,585,138	(1,052,085,915)	99,379,591
Net increase (decrease) in cash and cash equivalents	25,296,185	1,187,795	(104,635)	—	26,379,345
Effects of foreign exchange on cash balances.....	—	—	10,137,321	—	10,137,321
Cash and cash equivalents at the beginning of the year.....	9,394,220	4,970,074	25,625,487	—	39,989,781
Cash and cash equivalents at the end of the year	**Ps. 34,690,405**	**Ps. 6,157,869**	**Ps. 35,658,173**	**Ps. —**	**Ps. 76,506,447**

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF CASH FLOWS
For the year ended December 31, 2020

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Operating activities:					
Net (loss) income	Ps. (508,878,813)	Ps. (425,617,517)	Ps. (15,507,766)	Ps. 440,952,031	Ps. (509,052,065)
Income taxes and duties	20,804,230	159,451,307	5,316,538	—	185,572,075
Depreciation and amortization of wells, pipelines, properties, plant and equipment	1,066,176	126,778,686	1,786,958	—	129,631,820
Amortization of intangible assets	453,081	(30,155)	56,062	—	478,988
Impairment of wells, pipelines, properties, plant and equipment	—	36,303,471	50,229	—	36,353,700
Capitalized unsuccesful wells	—	10,947,702	—	—	10,947,702
Unsuccesful wells from intangible assets	—	8,404,284	—	—	8,404,284
Loss from derecognition of disposal of wells, pipelines, properties, plant and equipment	94,065	3,004,053	2,199,444	—	5,297,562
Depreciation of rights of use	644,838	5,453,688	1,130,705	—	7,229,231
Loss from derecognition of disposal of intangible asset			396,118		396,118
Cancellation of leases	—	(1,101,987)	—	—	(1,101,987)
(Gains) on disposal of subsidiary companies	—	—	(707,533)	—	(707,533)
Discount rate of reserve for well abandonment	—	4,555,692	—	—	4,555,692
Loss (profit) sharing in joint ventures and associates	441,125,283	(41,685)	3,582,218	(441,125,283)	3,540,533
Unrealized foreign exchange loss (income)	117,158,102	12,040,638	3,267,503	—	132,466,243
Interest expense	134,335,289	25,908,927	1,521,026	—	161,765,242
Interest income	(11,617,299)	(5,124,749)	—	—	(16,742,048)
Duties and taxes	1,349,021	(155,315,035)	(3,725,449)	—	(157,691,463)
Accounts receivable, inventories, accounts payable, DFIs and provisions	(16,644,218)	(692,255)	22,115,695	—	4,779,222
Employee benefits	(355,666)	64,873,037	(5,347,025)	—	59,170,346
Inter-company charges and deductions	(147,308,477)	37,878,271	35,319,045	74,111,161	—
Cash flows from (used in) operating activities	32,225,612	(92,323,627)	51,453,768	73,937,909	65,293,662
Investing activities:					
Acquisition of wells, pipelines, properties, plant and equipment and intangible assets	(349,555)	(97,841,648)	(40,426,953)	—	(138,618,156)
Other assets and other receivables	930,596	(812,028)	(2,640,055)	—	(2,521,487)
(Increase) decrease due to Inter-company investing	(194,281,597)	—	627,372	193,654,225	—
Cash flows (used in) from investing activities	(193,700,556)	(98,653,676)	(42,439,636)	193,654,225	(141,139,643)
Financing activities:					
Increase in equity due to Certificates of Contribution "A"	46,256,000	—	—	—	46,256,000
Long-term and interest received from the Mexican Government	5,800,940	—	—	—	5,800,940
Lease payments of principal and interest	(396,917)	(8,266,969)	(1,346,915)	—	(10,010,801)
Loans obtained from financial institutions	730,222,863	1,046	557,905,959	—	1,288,129,868
Debt payments, principal only	(601,448,338)	(4,828,154)	(545,685,655)	—	(1,151,962,147)
Interest paid	(122,553,204)	(7,200,077)	(1,235,869)	—	(130,989,150)
Inter-company increase (decrease) financing	84,752,963	211,415,474	(28,576,303)	(267,592,134)	—
Net cash flows from (used in) financing activities:	142,634,307	191,121,320	(18,938,783)	(267,592,134)	47,224,710
Net increase (decrease) in cash and cash equivalents	(18,840,637)	144,017	(9,924,651)	—	(28,621,271)

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Effects of foreign exchange on cash balances ...	—	—	7,989,421	—	7,989,421
Cash and cash equivalents at the beginning of the year	28,234,857	4,826,057	27,560,717	—	60,621,631
Cash and cash equivalents at the end of the year	**Ps. 9,394,220**	**Ps. 4,970,074**	**Ps. 25,625,487**	**Ps. —**	**Ps. 39,989,781**

SUPPLEMENTAL CONDENSED CONSOLIDATING FINANCIAL INFORMATION

STATEMENT OF CASH FLOWS
For the year ended December 31, 2019

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Operating activities:					
Net (loss) income:	Ps. (347,289,363)	Ps. (225,457,279)	Ps. (4,974,486)	Ps. 295,609,104	Ps. (282,112,024)
Income taxes and duties	(11,557,958)	352,291,238	3,090,209	—	343,823,489
Depreciation and amortization of wells, pipelines, properties, plant and equipment	1,183,741	134,134,135	1,869,134	—	137,187,010
Amortization of intangible assets	373,961	86,342	83,069	—	543,372
Impairment of wells, pipelines, properties, plant and equipment	—	27,672,705	3,610,449	—	31,283,154
Capitalized unsuccesful wells	—	71,604,308	—	—	71,604,308
Unsuccesful wells from intangible assets	—	7,990,877	—	—	7,990,877
Loss from derecognition of disposal of wells, pipelines, properties, plant and equipment	14,115	1,492,916	1,034,527	—	2,541,558
Depreciation of rights of use	639,877	5,439,642	1,349,756	—	7,429,275
Discount rate of reserve for well abandonment	—	(258,816)	—	—	(258,816)
Loss (profit) sharing in joint ventures and associates	296,230,824	(538,281)	(1,473,955)	(293,060,695)	1,157,893
Unrealized foreign exchange loss (income)	(74,439,514)	(2,867,091)	(938,369)	—	(78,244,974)
Interest expense	118,543,971	12,446,222	1,871,147	—	132,861,340
Interest income	(22,964,784)	(5,410,645)	(860,174)	—	(29,235,603)
Duties and taxes	(10,682,007)	(356,254,147)	(5,737,259)	—	(372,673,413)
Accounts receivable, inventories, accounts payable, DFIs and provisions	11,279,402	32,413,620	675,345	—	44,368,367
Employee benefits	52,052,212	9,322,327	5,580,162	—	66,954,701
Inter-company charges and deductions	(439,039,267)	176,676,691	5,349,241	257,013,335	—
Cash flows from (used in) operating activities	(425,654,790)	240,784,764	10,528,796	259,561,744	85,220,514
Investing activities:					
Acquisition of wells, pipelines, properties, plant and equipment and intangible assets	(232,592)	(132,206,201)	5,564,862	—	(126,873,931)
Other assets and other receivables	14,743,694	933,269	(101,835)	—	15,575,128
(Increase) decrease due to Inter-company investing	401,422,502	—	—	(401,422,502)	—
Cash flows (used in) from investing activities	415,933,604	(131,272,932)	5,463,027	(401,422,502)	(111,298,803)
Financing activities:					
Increase in equity due to Certificates of Contribution "A"	122,131,000	41,956,917	(41,956,917)	—	122,131,000
Long-term and interest received from the Mexican Government	38,704,883	—	—	—	38,704,883
Lease payments of principal and interest	(588,463)	(8,745,025)	(1,375,933)	—	(10,709,421)
Loans obtained from financial institutions	824,049,426	46,297	343,739,223	—	1,167,834,946
Debt payments, principal only	(851,077,341)	(4,826,936)	(329,138,006)	—	(1,185,042,283)
Interest paid	(120,450,950)	(6,104,160)	(1,390,093)	—	(127,945,203)
Inter-company increase (decrease) financing	—	(143,484,166)	1,623,408	141,860,758	—

	Petróleos Mexicanos	Subsidiary guarantors	Non-guarantor subsidiaries	Eliminations	PEMEX consolidated
Net cash flows from (used in) financing activities:	12,768,555	(121,157,073)	(28,498,318)	141,860,758	4,973,922
Net increase (decrease) in cash and cash equivalents	3,047,369	(11,645,241)	(12,506,495)	—	(21,104,367)
Effects of foreign exchange on cash balances	—	—	(186,411)	—	(186,411)
Cash and cash equivalents at the beginning of the year	25,187,488	16,471,298	40,253,623	—	81,912,409
Cash and cash equivalents at the end of the year	**Ps. 28,234,857**	**Ps. 4,826,057**	**Ps. 27,560,717**	**Ps. —**	**Ps. 60,621,631**

NOTE 31. SUPPLEMENTARY INFORMATION ON OIL AND GAS EXPLORATION AND PRODUCTION ACTIVITIES (UNAUDITED)

Under the Mexican Constitution, all crude oil and other hydrocarbon reserves located in the subsoil of Mexico are owned by the Mexican nation and not by PEMEX. In August 2014, through the Round Zero process, the Mexican Government granted PEMEX the right to extract, but not own, certain petroleum and other hydrocarbon reserves in Mexico through assignment deeds.

This note provides supplementary information on the oil and gas exploration, development and production activities of Pemex Exploration and Production in compliance with the U.S. Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 932 10-5 "Extractive Activities—Oil and Gas" ("ASC Topic 932") and Accounting Standards Update 2010-03 (see Note 3-G).

As of the date of these consolidated financial statements, all exploration and production activities of Pemex Exploration and Production are conducted in Mexico. The supplemental data presented herein reflect information for all of Pemex Exploration and Production's oil and gas producing activities.

A. Capitalized costs for oil and gas producing activities (unaudited):

		2021	2020	2019
Proved Properties	Ps.	2,755,452,487	2,483,134,177	2,306,255,209
Construction in progress		65,874,785	64,911,619	50,951,279
Accumulated depreciation and amortization		(1,970,206,627)	(1,775,163,736)	(1,675,843,298)
Net capitalized costs	Ps.	851,120,645	772,882,060	681,363,190

B. Costs incurred for oil and gas property exploration and development activities (unaudited):

		2021	2020
Exploration	Ps.	40,812,385	33,986,110
Development		96,188,784	97,041,516
Total costs incurred	**Ps.**	**137,001,169**	**131,027,626**

PEMEX does not have property acquisition costs because the oil reserves it exploits are owned by the Mexican nation.

Exploration costs include costs of geological and geophysical studies of fields in the amount of Ps. 10,054,253 and Ps. 9,599,274, for 2021 and 2020, respectively. These costs are accounted for as geological and geophysical exploration expenses, in accordance with the successful efforts method of accounting.

Development costs include those costs incurred in obtaining access to proved reserves and providing facilities for extracting, treating, gathering and storing oil and gas.

C. Results of operations for oil and gas producing activities (unaudited):

		2021	2020	2019
Revenues from sale of oil and gas	Ps.	944,008,383	558,051,547	762,102,939
Hydrocarbon duties		306,827,282	154,609,136	343,242,436
Production costs (excluding taxes)		310,389,017	257,571,641	275,090,795
Other costs and expenses		35,671,317	(7,024,695)	(6,910,321)
Exploration expenses		37,006,392	31,868,857	90,258,519
Depreciation, depletion, amortization and accretion		62,569,917	845,380	222,651,461
		752,463,925	437,870,319	924,332,890
Results of operations for oil and gas producing activities	**Ps.**	**191,544,458**	**120,181,228**	**(162,229,951)**

D. Sales prices (unaudited)

The following table summarizes average sales prices in U.S. dollars for each of the years ended December 31 (excluding production taxes):

Description	2021	2020	2019
	US$	US$	US$
Weighted average sales price per barrel of oil equivalent (boe)[1]	52.22	27.86	43.52
Crude oil, per barrel	66.06	35.47	57.13
Natural gas, per thousand cubic feet	5.16	2.54	3.55

[1] To convert dry gas to barrels of oil equivalent, a factor of 5.201 thousand cubic feet of dry gas per barrel of oil equivalent is used.

E. Crude oil and natural gas reserves (unaudited)

Under the Mexican Constitution, all oil and other hydrocarbon reserves located in the subsoil of Mexico are owned by the Mexican nation and not by PEMEX. Under the Petróleos Mexicanos Law, Pemex Exploration and Production has the right to extract, but not own, these reserves, and to sell the resulting production. The exploration and development activities of Petróleos Mexicanos and the Subsidiary Entities are limited to reserves located in Mexico.

Proved oil and natural gas reserves are those estimated quantities of crude oil, natural gas and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be economically producible from a given date forward, from known reservoirs and under existing economic conditions, operating methods and government regulations.

Proved reserves estimates as of December 31, 2021 were prepared by the Exploration and Production segment and were reviewed by the Independent Engineering Firms (as defined below), which audit its estimates of hydrocarbon reserves. According to the *Lineamientos que Regulan los Procedimientos de Cuantificación y Certificación de Reservas de la Nación* (Guidelines for Regulating the Nation's Reserves Quantification and Certification Procedures), CNH should review and approve of Hydrocarbons Reserves reports of Mexico's operators in the month of April. As of the date of these consolidated financial statements, the proved reserves estimates as of December 31, 2021 have not been approved by the CNH.

Pemex Exploration and Production estimates proved reserves based on generally accepted petroleum engineering and evaluation methods and procedures, which are based primarily on applicable SEC regulations and, as necessary, the SPE's publication entitled Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information, dated June 25, 2019 and other SPE publications, including the SPE's publication entitled Petroleum Resources Management System, as well as other technical sources, including Estimation and Classification of Reserves of Crude Oil, Natural Gas, and Condensate, by Chapman Cronquist, and Determination of Oil and Gas Reserves, Petroleum Society Monograph Number 1, published by the Canadian Institute of Mining and Metallurgy & Petroleum. The choice of method or combination of methods employed in the analysis of each reservoir is determined by:

- Experience in the area
- Stage of development
- Quality and completeness of basic data
- Production and pressure histories

Reserves data set forth herein represents only estimates. Reserves valuation is a subjective process of estimating underground accumulations of crude oil and natural gas that cannot be measured in an exact manner. The accuracy of any reserves estimate depends on the quality of available data, engineering and geological interpretation and professional judgment. As a result, estimates of different engineers may vary. In addition, the results of drilling, testing and producing subsequent to the date of an estimate may lead to the revision of an estimate.

During 2021, PEMEX did not record any material increase in PEMEX's hydrocarbons reserves as a result of the use of new technologies.

In order to ensure the reliability of PEMEX's reserves estimation efforts, it has undertaken the internal certification of its estimates of reserves since 1996. PEMEX has established certain internal controls in connection with the preparation of its proved reserves estimates. Initially, teams of geoscientists from Pemex Exploration and Production's exploration and exploitation business units (with

each of these units covering several projects) prepare the reserves estimates, using different estimation processes for valuations relating to new discoveries and developed fields, respectively. Subsequently, the regional reserves offices collect these reserves estimates from the units and request that the *Gerencia de Certificación de Reservas de Hidrocarburos*, (Office of Hydrocarbon Reserves Certification), the central hydrocarbon reserves management body of Pemex Exploration and Production, review and certify such valuations and the recording of the related reserves. This internal certification process is undertaken in accordance with internal guidelines for estimating and classifying hydrocarbon reserves, which are based on the SEC's rules and definitions.

The Office of Hydrocarbon Reserves Certification, which additionally oversees and conducts an internal audit of the above process, consists entirely of professionals with geological, geophysical, petrophysical and reservoir engineering backgrounds. The engineers who participate in PEMEX's reserves estimation process are experienced in the following areas: reservoir numerical simulation; well drilling and completion; pressure, volume and temperature (PVT) analysis; analytical tools used in forecasting the performance of the various elements comprising the production system; and design strategies in petroleum field development. Furthermore, all of PEMEX's personnel have been certified by the *Secretaría de Educación Pública* (Ministry of Public Education), most have earned master's degrees in areas of study such as petroleum engineering, geology and geophysical engineering and they possess an average of over fifteen years of professional experience.

In addition to this internal review process, Pemex Exploration and Production's final reserves estimates are audited by independent engineering firms. Four independent engineering firms audited Pemex Exploration and Production's estimates of proved reserves as of December 31, 2021 or January 1, 2022: DeGolyer and MacNaughton ("DeGolyer"), Ryder Scott Company L.P ("Ryder Scott"), GLJ LTD. ("GLJ") and Sproule International Limited and Sproule México, S.A. de C.V. (which we refer to as "Sproule"), together, the "Independent Engineering Firms." The reserves estimate reviewed by the Independent Engineering Firms totaled 89.0% of PEMEX's estimated proved reserves. The remaining 11.0% of PEMEX's estimated proved reserves consisted of reserves located, among others, in some fields related to exploration and production contracts, in which a corresponding third party is responsible for assessing the volume of reserves.

DeGolyer audited the reserves in the Cantarell, Ku Maloob Zaap, Bellota Jujo and Samaria Luna business units, GLJ audited the reserves in the Poza Rica Altamira, Abkatún Pol Chuc and Litoral de Tabasco business units, Sproule audited the reserves in the Cinco Presidentes and Macuspana Muspac business units and Ryder Scott audited the reserves in the Reynosa, Veracruz business units and the reserves of fields recently added to Pemex´s inventory reserves. The audits conducted by the Independent Engineering Firms consisted primarily of: (1) analysis of historical static and dynamic reservoir data provided by Pemex Exploration and Production; (2) construction or updating of the Independent Engineering Firms' own static and dynamic reservoir characterization models of some of the fields; (3) economic analysis of the fields; and (4) review of Pemex Exploration and Production's production forecasts and reserves estimates.

Since reserves estimates are, by definition, only estimates, they cannot be reviewed for the purpose of verifying exactness. Instead, the Independent Engineering Firms conducted a detailed review of Pemex Exploration and Production's reserves estimates so that they could express an opinion as to whether, in the aggregate, the reserves estimates that Pemex Exploration and Production furnished were reasonable and had been estimated and presented in conformity with generally accepted petroleum engineering and evaluation methods and procedures.

All questions, including any suggested modifications to proved reserves estimates, that arose during the Independent Engineering Firms' review process were resolved by Pemex Exploration and Production to the satisfaction of the Independent Engineering Firms. The Independent Engineering Firms have concluded that PEMEX's estimated total proved oil and natural gas reserve volumes set forth in this report are, in the aggregate, reasonable and have been prepared in accordance with Rule 4-10(a) are consistent with international reserves reporting practice and are in accordance with the revised oil and gas reserves disclosure provisions of ASC Topic 932.

PEMEX´s total proved developed and undeveloped reserves of crude oil, condensates and liquefiable hydrocarbons recoverable from field processing plants increased by 0.5% in 2021, from 6,041.0 million barrels on December 31, 2020 to 6,073.0 million barrels at December 31, 2021. Our proved developed reserves of crude oil, condensates and liquefiable hydrocarbons recoverable from processing plants increased by 1.3% in 2021, from 3,603.4 million barrels on December 31, 2020 to 3,648.9 million barrels at December 31, 2021. The amount of our proved reserves of crude oil, condensate and liquefiable hydrocarbon reserves added in 2021 was enough to offset the level of production in 2021, which amounted to 697.1 million barrels of crude oil, condensates and liquefiable hydrocarbons.

Our total proved developed and undeveloped dry gas reserves increased by 0.8% in 2021, from 6,984.2 billion cubic feet at December 31, 2020 to 7,039.5 billion cubic feet on December 31, 2021. Our proved developed dry gas reserves increased by 0.3% in 2021, from 3,922.3 billion cubic feet on December 31, 2020 to 3,933.7 billion cubic feet at December 31, 2021. These increases were principally due to an increase in proved developed dry gas reserves of the Ixachi, Quesqui, Ku, Maloob, Madrefill, Teotleco, Xux and

May fields. The amount of dry gas reserves added in 2021 was enough to offset the level of production in 2021, which amounted to 750.9 billion cubic feet of dry gas. Our proved undeveloped dry gas reserves increased by 1.4% in 2021, from 3,061.9 billion cubic feet at December 31, 2020 to 3,105.8 billion cubic feet on December 31, 2021. This increase was principally due to an increase in proved undeveloped dry gas reserves of the Quesqui, Tupilco Profundo, Teca, Homol and Cuitláhuac fields.

During 2021, our exploration activity in the shallow waters of the Gulf of Mexico and onshore regions resulted in six new discoveries of oil fields (Tekuani, Tlakati, Chawila, Kuun, Tum, Racemosa and Tupilco Profundo). In addition, extension activities in our Camatl field led to the incorporation of additional reserves. Together, these extensions and discoveries led to the incorporation approximately 68.0 million barrels of oil equivalent.

The following three tables of crude oil and dry gas reserves set forth PEMEX's estimates of its proved reserves determined in accordance with Rule 4-10(a).

Summary of oil and gas [1] proved reserves as of December 31, 2021
based on average fiscal year prices

	Crude oil and Condensates [2]	Dry Gas [3]
	(in millions of barrels)	(in billions of cubic feet)
Proved developed and undeveloped reserves:		
Proved developed reserves	3,648.9	3,933.7
Proved undeveloped reserves	2,424.0	3,105.8
Total proved reserves	**6,073.0**	**7,039.5**

Note: Numbers may not total due to rounding.

[1] PEMEX does not currently produce synthetic oil or synthetic gas, or other natural resources from which synthetic oil or synthetic gas can be produced.

[2] Crude oil and condensate reserves include the fraction of liquefiable hydrocarbons recoverable in natural gas processing plants located at fields.

[3] Reserve volumes reported in this table are volumes of dry gas, although natural gas production reported in other tables refers to sour wet gas. There is a shrinkage in volume when natural gas liquids and impurities are extracted to obtain dry gas. Therefore, reported natural gas volumes are greater than dry gas volumes.

Source: Pemex Exploration and Production.

Crude oil and condensate reserves
(including natural gas liquids) [1]

	2021	2020	2019
Proved developed and undeveloped reserves:			
At December 31	6,041	5,961	5,786
Revisions [2]	565	651	784
Extensions and discoveries	115	97	78
Production	(697)	(695)	(688)
Farm outs & transfer to exploration and production contracts (CEE) & transfer of fields due to NHC bidding process	49	27	—
At December 31	**6,073**	**6,041**	**5,961**
Proved developed reserves at December 31	3,649	3,603	3,585
Proved undeveloped reserves at December 31	2,424	2,438	2,376

Note: Numbers may not total due to rounding.

[1] Crude oil and condensate reserves include the fraction of liquefiable hydrocarbons recoverable in natural gas processing plants located at fields.

(2) Revisions include positive and negative changes due to new data from well drilling, revisions made when actual reservoir performance differs from expected performance and changes in hydrocarbon prices.

Source: Pemex Exploration and Production.

Dry gas reserves

	2021	2020	2019
	(in billions of cubic feet)		
Proved developed and undeveloped reserves:			
At December 31	6,984	6,352	6,370
Revisions (1)	195	1,240	656
Extensions and discoveries	590	176	196
Production (2)	(751)	(819)	(870)
Farm outs & transfer to exploration and production contracts (CEE) & transfer of fields due to NHC bidding process	21	35	—
At December 31	**7,040**	**6,984**	**6,352**
Proved developed reserves at December 31	3,934	3,922	3,609
Proved undeveloped reserves at December 31	3,106	3,062	2,743

Note: Numbers may not total due to rounding.

(1) Revisions include positive and negative changes due to new data from well drilling, revisions made when actual reservoir performance differs from expected performance and changes in hydrocarbon prices.

(2) Production refers here to dry gas, although natural gas production reported in other tables refers to sour wet gas. There is a shrinkage in volume when natural gas liquids and impurities are extracted to obtain dry gas. Therefore, reported natural gas volumes are greater than dry gas volumes.

Source: Pemex Exploration and Production.

Pemex Exploration and Production's reserve-replacement ratio, or RRR, for a given period is calculated by dividing the sum of proved reserves additions due to discoveries, developments, delineations and revisions by that period's total production. During 2021, we obtained an increase of 884.1 million barrels of oil equivalent of proved reserves as aggregated from discoveries, revisions, delimitations and development and production, which represents a RRR of 105.1%. PEMEX's 2021 RRR is quiet similar improvement as compared to 2020, when the RRR was 119.7%. PEMEX expect to continue obtaining values of this index of about 100 percent, as in the recent years.

PEMEX's reserves production ratio, which is presented in terms of years, is calculated by dividing the estimated remaining reserves at the end of the relevant year by the total production of hydrocarbons for that year. As of December 31, 2021, this ratio is 8.8 years for proved reserves which remain steady than RRP of 2020.

F. Standardized measure of discounted future net cash flows related to proved oil and gas reserves (unaudited)

The standardized measure tables presented below relate to proved oil and gas reserves excluding proved reserves scheduled to be produced after the year 2047. This measure is presented in accordance with ASC Topic 932.

Estimated future cash inflows from production are computed by applying average prices of oil and gas on the first day of each month of 2021. Future development and production costs are those estimated future expenditures needed to develop and produce the year-end estimated proved reserves after a net cash flows discount factor of 10%, assuming constant year-end economic conditions.

Future tax expenses are computed by applying the appropriate year-end statutory tax rates with consideration of the tax rates of the new fiscal regime for Pemex Exploration and Production already legislated for 2021 to the future pre-tax net cash flows related to PEMEX's proved oil and gas reserves.

The estimated future payment of taxes was calculated based on the latest fiscal regime applicable by decree to Pemex Exploration and Production, published in the Official Gazette of the Federation on December 9, 2019.

The standardized measure provided below represents a comparative benchmark value rather than an estimate of expected future cash flows or fair market value of PEMEX's production rights. There are numerous uncertainties inherent in estimating quantities of proved reserves and in projecting future rates of production and timing of development expenditures, including many factors beyond the control of the producer. Accordingly, reserve estimates may be materially different from the quantities of crude oil and natural gas that are ultimately recovered.

Standardized measure of discounted future net cash flows as of December 31

	2021	2020	2019
	(in millions of U.S. dollars)		
Future cash inflows	371,331	201,777	330,286
Future production costs (excluding profit taxes)	(146,062)	(109,064)	(114,782)
Future development costs	(24,183)	(23,631)	(37,540)
Future cash flows before tax	201,085	69,082	177,964
Future production and excess gains taxes	(146,416)	(73,122)	(134,175)
Future net cash flows	54,669	(4,040)	43,790
Effect of discounting net cash flows by 10%	(18,442)	(3,359)	(18,807)
Standardized measure of discounted future net cash flows	**36,226**	**(681)**	**24,983**

Note: Table amounts may not total due to rounding.

To comply with ASC Topic 932, the following table presents the aggregate standardized measure changes for each of the last three years and significant sources of variance:

Changes in standardized measure of discounted future net cash flows

	2021	2020	2019
	(in millions of U.S. dollars)		
Sales of oil and gas produced, net of production costs	(34,600)	(16,968)	(29,530)
Net changes in prices and production costs	84,233	(39,509)	73,278
Extensions and discoveries	1,583	1,426	1,658
Development cost incurred during the year	4,755	4,654	4,281
Changes in estimated development costs	(5,675)	(10,019)	3,341
Reserves revisions and timing changes	26,205	5,808	(19,615)
Accretion of discount of pre-tax net cash flows	2,220	5,929	(9,305)
Net changes in production and excess gains taxes	(41,813)	23,015	(25,343)
Aggregate change in standardized measure of discounted future net cash flows	**36,907**	**(25,664)**	**(1,235)**
Standardized measure:			
As of January 1	(681)	24,983	26,218
As of December 31	36,226	(681)	24,983
Change	**36,907**	**(25,664)**	**(1,235)**

Note: Table amounts may not total due to rounding.

In computing the amounts under each factor of change, the effects of variances in prices and costs are computed before the effects of changes in quantities. Consequently, changes in reserves are calculated at December 31 prices and costs.

The change in computed taxes includes taxes effectively incurred during the year and the change in future tax expense.

Exhibit 12.1

CERTIFICATION

I, Octavio Romero Oropeza, certify that:

1. I have reviewed this annual report on Form 20-F of Petróleos Mexicanos;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: April 29, 2022

By: /s/ Octavio Romero Oropeza

Name: Octavio Romero Oropeza
Title: Chief Executive Officer/Director General

Exhibit 12.2

CERTIFICATION

I, Antonio López Velarde Loera, certify that:

1. I have reviewed this annual report on Form 20-F of Petróleos Mexicanos;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: April 29, 2022

By: /s/ Antonio López Velarde Loera

Name: Antonio López Velarde Loera
Title: Acting Chief Financial Officer/Acting Corporate Director of Finance

Exhibit 13.1

Certification
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
(Subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of Petróleos Mexicanos, a productive state-owned company of the Federal Government of the United Mexican States (the "Company"), does hereby certify, to such officer's knowledge, that:

The Annual Report on Form 20-F for the year ended December 31, 2021 (the "Form 20-F") of the Company fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 and information contained in the Form 20-F fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 29, 2022

By: /s/ Octavio Romero Oropeza
Name: Octavio Romero Oropeza
Title: Chief Executive Officer/Director General

Date: April 29, 2022

By: /s/ Antonio López Velarde Loera
Name: Antonio López Velarde Loera
Title: Acting Chief Financial Officer/Acting Corporate Director of Finance

Exhibit 15.1
(Part 1 of 2)

April 22, 2022

Project 1223310

Ing. Octavio Romero Oropeza
Director General
Petróleos Mexicanos
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 44
Colonia Verónica Anzures
Alcaldía Miguel Hidalgo
11300 Ciudad de México, México

Dear Ing. Octavio Romero Oropeza:

We hereby consent to all references to our firm as set forth in the Annual Report on Form 20-F of Petróleos Mexicanos ("Pemex") for the year ending December 31, 2021 (the "Form 20-F"), under the headings "Presentation of Information Concerning Reserves," "Item 4. Information on the Company – Business Overview – Exploration and Production – Reserves," and "Item 19. Exhibits. Documents filed as exhibits to this Form 20-F," and to the filing of our audit letter dated April 22, 2022, as an exhibit to the Form 20-F. We have audited the estimates of Pemex's proved oil, condensate, natural gas, and oil equivalent reserves, as of December 31, 2021, for 47 fields located in the Abkatún-Pol-Chuc and Litoral de Tabasco business units in the Southeastern offshore region of Mexico. These estimates were prepared by Pemex Exploración y Producción in accordance with the reserves definitions of Regulation S-X Rule 4-10(a) of the U.S. Securities and Exchange Commission.

Sincerely,

GLJ LTD.

/s/ Patrick A. Olenick

Patrick A. Olenick, P. Eng.
Vice President

PAO/ljn
Attachments

Exhibit 15.1
(Part 2 of 2)

April 22, 2022

Project 1223310

Ing. Octavio Romero Oropeza
Director General
Petróleos Mexicanos
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 44
Colonia Verónica Anzures
Alcaldía Miguel Hidalgo
11300 Ciudad de México, México

Dear Ing. Octavio Romero Oropeza:

We hereby consent to all references to our firm as set forth in the Annual Report on Form 20-F of Petróleos Mexicanos ("Pemex") for the year ending December 31, 2021 (the "Form 20-F"), under the headings "Presentation of Information Concerning Reserves," "Item 4. Information on the Company – Business Overview – Exploration and Production – Reserves," and "Item 19. Exhibits. Documents filed as exhibits to this Form 20-F," and to the filing of our audit letter dated April 22, 2022, as an exhibit to the Form 20-F. We have audited the estimates of Pemex's proved oil, condensate, natural gas, and oil equivalent reserves, as of December 31, 2021, for 100 fields located in the Poza Rica-Altamira business unit in the Northeastern region of Mexico. These estimates were prepared by Pemex Exploración y Producción in accordance with the reserves definitions of Regulation S-X Rule 4-10(a) of the U.S. Securities and Exchange Commission.

Sincerely,

GLJ LTD.

/s/ Patrick A. Olenick

Patrick A. Olenick, P. Eng.
Vice President

PAO/ljn
Attachments

PEMEX EXPLORACIÓN Y PRODUCCIÓN

RESERVES AUDIT OF
MEXICAN OIL AND GAS PROPERTIES
ACTIVO DE PRODUCCIÓN ABKATÚN-POL-CHUC & LITORAL DE TABASCO

PROVED RESERVES
(SEC RESERVES DEFINITIONS)

Effective December 31, 2021

1223310

GLJ

PROVED RESERVES AUDIT—SEC

TABLE OF CONTENTS

	Page
COVER LETTER	**3**
INDEPENDENT PETROLEUM CONSULTANTS' CONSENT	**5**
INTRODUCTION	**6**
SEC RESERVES DEFINITIONS	**8**
AUDIT PROCEDURE	**10**
PRODUCT PRICE AND MARKET FORECASTS APPENDIX I	**13**
Certificates of Qualification	**14**

April 26, 2022 11:08:00

GLJ

April 22, 2022

Project 1223310

Ing. Ángel Cid Munguía
Director General de Pemex Exploración y Producción

Pemex Exploración y Producción
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 41
Colonia Verónica Anzures
Alcaldía Miguel Hidalgo
11300 Ciudad de México, México

Ing. Ángel Cid Munguía:

Re: Pemex Exploración y Producción
Proved Reserves Audit – SEC Reserves Definitions
Activo de Producción Abkatún-Pol-Chuc and
Activo de Producción Litoral de Tabasco
Effective December 31, 2021

At the request of Pemex Exploración y Producción (the "Company"), a wholly owned subsidiary of Petróleos Mexicanos (Pemex), GLJ Ltd. (GLJ) has conducted a reserves audit of the proved reserves estimates of certain oil and gas properties owned by the United Mexican States. The effective date of the proved reserves is December 31, 2021 and the reserves audit was completed on February 11, 2022. The Company has represented that these properties account for 10.61 percent on a net oil equivalent barrel basis of the Company's net total proved reserves as of the effective date. There are 47 fields associated with the properties reviewed by GLJ, and they are located in the Abkatún-Pol-Chuc and Litoral de Tabasco business units in the Southeastern offshore region of Mexico.

The estimates audited by GLJ were prepared by the Company in accordance with the reserves definitions of Regulation S-X Rule 4-10(a) of the U.S. Securities and Exchange Commission (SEC). GLJ's third party reserves audit was prepared for public disclosure by the Company in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

According to the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards) published by the Society of Petroleum Engineers (2019), "An audit is an examination of Reserves information that is conducted for the purpose of expressing an opinion as to whether such Reserves information, in the aggregate, is reasonable and has been estimated by qualified individuals and presented in conformity with generally accepted petroleum engineering and evaluation principles and in compliance with the relevant Reserves definitions".

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. All reserve estimates involve some degree of uncertainty. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal classifications, either proved or

unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-classified as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. At the Company's request, this report addresses only the proved reserves attributable to the properties reviewed herein.

The Company provided a table with their reserves estimates by field and all pertinent well and reservoir data such as geological maps, well logs, production and injection history, drill stem tests, workovers, pressure surveys, production tests, fluid analysis, and planned development activities. The proved reserves prepared by the Company for the properties that GLJ reviewed were estimated based on volumetric calculations, decline analysis or material balance methods or by any combination of the aforementioned methods depending on the available data and the significance of the property within the overall corporate portfolio.

The economic parameters such as operating costs, capital costs, process losses, liquid yields, abandonment cost and product pricing provided by the Company were accepted by GLJ without review or verification. Prices, operating and capital costs, including maintenance capital, were provided by the Company.

While the oil and gas industry may be subject to regulatory changes from time to time that could affect an industry participant's ability to recover its reserves, we are not aware of any such governmental actions which would restrict the recovery of the effective date estimated reserves.

GLJ has used all assumptions, data, procedures, and methods that it considers necessary and appropriate to prepare this report. For significant properties with performance-based assignments, GLJ reviewed the volumetric recovery to address the reasonableness of the assignment and development activity considered by the Company. In fields with significant performance and pressure data, the Company maps and geological models were accepted, but in cases where volumetric analysis formed the primary basis for the Company's reserves estimate, GLJ audited Company maps in more detail, including a review of associated geophysical interpretations.

Based on our review, including the data, technical processes and interpretations presented by the Company, it is our opinion that the overall procedures and methodologies utilized by the Company in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by the Company are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards. As in all aspects of oil and gas evaluation, there are uncertainties inherent in the interpretation of engineering and geoscience data; therefore, our conclusions necessarily represent only informed professional judgment.

It is trusted that this audit meets your current requirements. Should you have any questions regarding this analysis, please contact the undersigned.

Yours very truly,

GLJ LTD.

/s/ Patrick A. Olenick, P. Eng.

Patrick A. Olenick, P. Eng.
Vice President

INDEPENDENT PETROLEUM CONSULTANTS' CONSENT

The undersigned firm of Independent Petroleum Consultants of Calgary, Alberta, Canada has prepared an audit of the Pemex Exploración y Producción (the "Company") Mexican oil and gas properties within Activo de Producción Abkatún-Pol-Chuc and Activo de Producción Litoral de Tabasco and hereby gives consent to the use of its name.

In the course of the audit, the Company provided GLJ Ltd. personnel with basic information which included land data, well information, geological information, reservoir studies, estimates of on-stream dates, contract information, current hydrocarbon product prices, operating cost data, capital budget forecasts, financial data and future operating plans.

According to the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards) published by the Society of Petroleum Engineers (2019), "An audit is an examination of Reserves information that is conducted for the purpose of expressing an opinion as to whether such Reserves information, in the aggregate, is reasonable and has been estimated by qualified individuals and presented in conformity with generally accepted petroleum engineering and evaluation principles and in compliance with the relevant Reserves definitions".

Based on our review, including the data, technical processes and interpretations presented by the Company, it is our opinion that the overall procedures and methodologies utilized by the Company in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by the Company are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards.

PERMIT TO PRACTICE
GLJ LTD.

Signature:_____

Date: April 22, 2022

PERMIT NUMBER: P 2066
The Association of Professional Engineers and Geoscientists of Alberta

APEGA ID# 77134

GLJ LTD.
Corporate Seal

GLJ

INTRODUCTION

GLJ Ltd. (GLJ) was commissioned by Pemex Exploración y Producción (the "Company"), a subsidiary of Petroleos Mexicanos, to prepare a reserves audit of the gross (100 percent working interest) proved reserves and net gas reserves in 47 fields in the Activo de Producción Abkatún-Pol-Chuc and Activo de Producción Litoral de Tabasco. The effective date of the proved reserves is December 31, 2021 and the reserves audit was completed on February 11, 2022. The Political Constitution of the United Mexican States provides that the Mexican nation owns all petroleum and other hydrocarbon reserves for these fields; however, these fields have been assigned to and are currently operated by the Company.

The estimates audited by GLJ were prepared by the Company based on the definitions and disclosure guidelines of the United States Securities and Exchange Commission contained in the Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009, in the Federal Register (SEC regulations). GLJ's third party reserves audit was prepared for public disclosure by the Company in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

According to the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards) published by the Society of Petroleum Engineers (2019), "A Reserves audit is the process of reviewing certain of the pertinent facts interpreted and assumptions made that have resulted in an estimate of Reserves and/or Reserves information prepared by others and the rendering of an opinion about the appropriateness of the methodologies used, the adequacy and quality of the data relied upon, the depth and thoroughness of the Reserves estimation process, the categorization of Reserves appropriate to the relevant definitions used, and the reasonableness of the estimated Reserves quantities and/or the Reserves information." (section 2.2 (g)). Reserves Information may consist of various estimates pertaining to the extent and value of petroleum properties.

Based on our review, including the data, technical processes and interpretations presented by the Company, it is our opinion that the overall procedures and methodologies utilized by the Company in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by the Company are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards.

For the reserves and income projections, the Company stated they used unweighted arithmetic average prices in effect at the first day of the month during the 12-month period prior to December 31, 2021 (the effective date), unless prices were defined by contractual arrangements, as required by the SEC regulations. Reserves were estimated by the Company to the economic limit of production. The following table sets forth the total proved net after royalty reserves under constant prices and costs as estimated by the Company attributable to the properties that GLJ reviewed:

NET 1P (TOTAL PROVED) RESERVES ESTIMATED BY PEMEX EXPLORACIÓN Y PRODUCCIÓN

Estimated Net Proved Reserves Audited by GLJ Ltd.

Attributable to Certain Properties—Activo de Producción Abkatún-Pol-Chuc and Activo de Producción Litoral de Tabasco As of December 31, 2021

Category	Oil[1] (MMbbl)	Gross Gas[2] (MMMcf)	Plant Inlet Gas[3] (MMMcf)	Condensate[4] (MMbbl)	Plant Liquids[5] (MMbbl)	Dry Gas[6] (MMboe)	BOE[7] (MMboe)
Proved Developed Producing	350.13	801.39	637.96	4.40	44.40	492.73	493.68
Proved Developed Non-Producing	61.28	59.55	41.00	0.42	2.84	31.64	70.63
Proved Undeveloped	178.79	278.91	197.91	1.40	13.77	152.84	223.34
Total Proved	590.21	1139.85	876.87	6.22	61.01	677.21	787.65

Notes

(1) Oil is produced oil and liquids separated from gas in the field
(2) Gross Gas is gas produced before any losses for fuel use, venting, transporting or plant shrinkage, net of re-injection
(3) Plant Inlet Gas is gas volumes measured at plant inlet, that is, gas in the reservoirs to be produced after shrinkage resulting from field separation and flaring, net of re-injection
(4) Condensate is the liquid volume recovered from the gas stream during the compression and dehydration stages of processing
(5) Plant liquids are liquid volumes recovered from the gas stream through the processing plants
(6) Dry Gas is gas after sweetening and removal of condensate and plant liquids and adjustment for re-injection and fuel losses. Units in barrels of oil equivalent using gas conversion factors provided by the Company
(7) Barrels of oil equivalent were estimated assuming property specific ratio based on sales gas heating values provided by the Company

Liquid hydrocarbons are expressed in millions of barrels (MMbbl) and gas volumes are expressed in billions of cubic feet (MMMcf) at the official temperature and pressure bases of the areas in which the gas reserves are located. The net remaining reserves are also shown herein on an equivalent unit (boe) basis wherein natural gas is converted to oil equivalent barrels using a specific factor for each field. MMboe represents million barrels of oil equivalent.

GLJ notes that the Company has represented that its management of the produced fluids ends at the inlet of the gas processing plants. The reserves estimates include estimates of oil, plant condensate, plant inlet gas, sales gas, natural gas liquids and oil equivalent totals.

As the Company has represented that all subsurface hydrocarbons belong to the United Mexican States and given that the Company has also represented that it has been assigned a 100 percent interest in the audited properties by the United Mexican States, gross and net reserves are equal.

The Audit Procedure section outlines general procedures used in preparing this audit.

SEC RESERVES DEFINITIONS

The following definitions are excerpts from Regulation S-X 210.4-10. Portions of these definitions within square parentheses, [ ], have been transposed from other sections of Regulation S-X 210.4-10 to improve readability.

Resources

Resources are quantities of oil and gas estimated to exist in naturally occurring accumulations. A portion of the resources may be estimated to be recoverable, and another portion may be considered to be unrecoverable. Resources include both discovered and undiscovered accumulations.

Reserves

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce or a revenue interest in the production, installed means of delivering oil and gas or related substances to market, and all permits and financing required to implement the project.

Note: Reserves should not be assigned to adjacent reservoirs isolated by major, potentially sealing, faults until those reservoirs are penetrated and evaluated as economically producible. Reserves should not be assigned to areas that are clearly separated from a known accumulation by a non-productive reservoir (i.e. , absence of reservoir, structurally low reservoir, or negative test results). Such areas may contain prospective resources (i.e., potentially recoverable resources from undiscovered accumulations).

Proved Oil and Gas Reserves

Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.

(i) The area of the reservoir considered as proved includes:

  (A) The area identified by drilling and limited by fluid contacts, if any, and

  (B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.

(ii) In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.

(iii) Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.

(iv) Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:

  (A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and

  (B) The project has been approved for development by all necessary parties and entities, including governmental entities.

(v) Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

Developed Oil and Gas Reserves

Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

(i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and

(ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

Undeveloped Oil and Gas Reserves

Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

(i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.

(ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstances, justify a longer time.

(iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir [see Other Definitions below], or by other evidence using reliable technology establishing reasonable certainty.

Other Pertinent Definitions

Analogous Reservoir

Analogous reservoirs, as used in resources assessments, have similar rock and fluid properties, reservoir conditions (depth, temperature, and pressure) and drive mechanisms, but are typically at a more advanced stage of development than the reservoir of interest and thus may provide concepts to assist in the interpretation of more limited data and estimation of recovery. When used to support proved reserves, an “analogous reservoir” refers to a reservoir that shares the following characteristics with the reservoir of interest:

(i) Same geological formation (but not necessarily in pressure communication with the reservoir of interest);

(ii) Same environment of deposition;

(iii) Similar geological structure; and

(iv) Same drive mechanism.

Reasonable Certainty

If deterministic methods are used, reasonable certainty means a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability that the quantities actually recovered will equal or exceed the estimate. A high degree of confidence exists if the quantity is much more likely to be achieved than not, and, as changes due to increased availability of geoscience (geological, geophysical, and geochemical), engineering, and economic data are made to estimated ultimate recovery (EUR) with time, reasonably certain EUR is much more likely to increase or remain constant than to decrease.

Reliable Technology

Reliable technology is a grouping of one or more technologies (including computational methods) that has been field tested and has been demonstrated to provide reasonably certain results with consistency and repeatability in the formation being evaluated or in an analogous formation.

Reservoir

A porous and permeable underground formation containing a natural accumulation of producible oil and/or gas that is confined by impermeable rock or water barriers and is individual and separate from other reservoirs.

AUDIT PROCEDURE

The following outlines the methodology employed by GLJ in conducting the audit of the Company's oil and gas proved reserves attributed to the properties in Activo de Producción Abkatún-Pol-Chuc and Activo de Producción Litoral de Tabasco. This audit has been prepared in accordance with definitions and standards under the U.S. Financial Accounting Standard Board (FASB) policies and legal requirements of the U.S. Securities and Exchange Commission (SEC).

INTEREST DESCRIPTIONS

The Company provided GLJ with current land interest information.

The Company has represented that all subsurface hydrocarbons belong to the United Mexican States, and that the Company has been assigned a 100 percent interest in the audited properties by the United Mexican States; therefore, gross and net reserves are equal. The cash flow and production forecasts were limited by economic limits not by a lease expiry.

DATA PROVIDED

The Company provided a table with their reserves estimates by field. Additionally, all pertinent well, reservoir and economic data such as geological maps, well logs, production and injection history, drill stem tests, workovers, pressure surveys, production tests, fluid analysis, planned development activities, operating expenses, capital costs, abandonment cost, process losses, liquid yields, etc., were provided by the Company.

TECHNICAL REVIEW

GLJ performs a bottoms-up analysis where individual properties are audited. Auditors review historical production, well activity, mapping, pressure data and development plans as well as the evaluation approach used by the Company. Meetings with the Company were held to determine the Company's view of the reservoirs and technical justification for future development.

The proved reserves prepared by the Company for the properties that GLJ reviewed were estimated based on volumetric calculations, decline analysis or material balance methods or by any combination of the aforementioned methods depending on the available data and the significance of the property within the overall corporate portfolio. Where possible, performance based reserves assignments were made by the Company. For significant properties with performance based assignments, GLJ reviewed the volumetric recovery to address the reasonableness of the assignment and development activity considered by the Company. In fields with significant performance and pressure data, the Company maps and geological models were accepted, but in cases where volumetric analysis formed the primary basis for the Company's reserves estimate, GLJ audited Company maps in more detail, including a review of associated geophysical interpretations.

Data used in the audit were obtained from Company personnel and Company files. In the preparation of our report, GLJ accepted as presented and have relied, without independent verification, upon a variety of information furnished by the Company such as interests and burdens, production, product transportation and marketing and sales agreements, capital costs, operating expense data, and capital cost estimates. If in the course of the audit, the validity or sufficiency of any material information was brought into question, GLJ did not rely on such information until such concerns were satisfactorily resolved.

The economic parameters such as operating costs, capital costs, process losses, liquid yields, abandonment cost and product pricing provided by the Company were accepted by GLJ without review or verification. Prices, operating and capital costs, including maintenance capital, were provided by the Company.

Reserves were estimated by the Company to the economic limit of production.

MARKETABLE PRODUCTS

Recoverable reserves were estimated by the Company to the following products:

Oil	Produced oil and liquids separated from gas in the field
Condensate	Condensate is the liquid volume recovered from the gas stream during the compression and dehydration stages of processing
Plant Liquids	Plant liquids are liquid volumes recovered from the gas stream through the processing plants
Plant Inlet Gas	Gas volumes measured at plant inlet, that is, gas in the reservoirs to be produced after shrinkage resulting from field separation and flaring, net of re-injection
Dry Gas	Gas after sweetening and removal of condensate and plant liquids and adjustment for re-injection and fuel losses

GLJ notes that the Company has represented to GLJ that its management of the produced fluids ends at the inlet of the gas processing plants.

The Company also presented quantities of hydrocarbons in barrels of oil equivalent (boe) using their own conversion factors.

LIST OF ABBREVIATIONS

AOF	absolute open flow
bbl	barrels
BIIP	bitumen initially-in-place
boe	barrel of oil equivalent, in this evaluation determined using 5.2 Mcf/boe for gas, 1 bbl/boe for all liquids, and 0 boe for sulphur
bopd	barrels of oil per day
Btu	British thermal units
bwpd	barrels of water per day
DSU	drilling spacing unit
GCA	gas cost allowance
GIIP	gas initially-in-place
GOC	gas-oil contact
GOR	gas-oil ratio
GORR	gross overriding royalty
GWC	gas-water contact
Mbbl	thousand barrels
Mboe	thousand boe
Mcf	thousand cubic feet of gas at standard conditions
Mcfe	thousand cubic feet of gas equivalent
Mlt	thousand long tons
M$	thousand dollars
MM$	million dollars
MMbbl	million barrels
MMboe	million boe
MMBtu	million British thermal units
MMcf	million cubic feet of gas at standard conditions
MMMcf	billion cubic feet of gas at standard conditions
MRL	maximum rate limitation
Mstb	thousand stock tank barrels
MMstb	million stock tank barrels
NGL	natural gas liquids (ethane, propane, butane and condensate)
NPI	net profits interest
OIIP	oil initially-in-place
ORRI	overriding royalty interest
OWC	oil-water contact
P&NG	petroleum and natural gas
PIIP	petroleum initially-in-place
psia	pounds per square inch absolute
psig	pounds per square inch gauge
PVT	pressure-volume-temperature
RLI	reserves life index, calculated by dividing reserves by the forecast of first year production
scf	standard cubic feet
sge	sales gas equivalent – if presented in this evaluation, determined using 1 barrel of oil or natural gas liquid = 5.2 Mcfe; 0 for sulphur
stb	stock tank barrel
WI	working interest
WTI	West Texas Intermediate

PRODUCT PRICE AND MARKET FORECASTS
December 31, 2021

The Company provided prices for oil, condensate and gas on a field basis. In the economic forecasts, the gas prices presented are well head price in terms of sales gas. As the gas price received is assumed to include value for plant liquids, no additional revenue is forecast for plant liquids.

CERTIFICATES OF QUALIFICATION

Patrick A. Olenick

CERTIFICATION OF QUALIFICATION

I, Patrick A. Olenick, Professional Engineer, 1920, 401 – 9th Avenue S.W., Calgary, Alberta, Canada hereby certify:

1. That I am an employee of GLJ Ltd., which company did prepare a detailed analysis of certain Mexican oil and gas properties of Pemex Exploración y Producción (the "Company"). The effective date of this evaluation is December 31, 2021.
2. That I do not have, nor do I expect to receive any direct or indirect interest in the securities of the Company or its affiliated companies.
3. That I attended the University of Calgary where I graduated with a Bachelor of Science Degree in Mechanical Engineering in 2003; that I am a Registered Professional Engineer in the Province of Alberta; and, that I have in excess of nineteen years experience in engineering studies relating to oil and gas fields.
4. That a personal field inspection of the properties was not made; however, such an inspection was not considered necessary in view of the information available from public information and records, the files of the Company, and the appropriate provincial regulatory authorities.

April 22, 2022

PEMEX EXPLORACIÓN Y PRODUCCIÓN

RESERVES AUDIT OF MEXICAN OIL AND GAS PROPERTIES ACTIVO DE PRODUCCIÓN POZA RICA-ALTAMIRA

PROVED RESERVES (SEC RESERVES DEFINITIONS)

Effective December 31, 2021

1223283

PROVED RESERVES AUDIT—SEC

TABLE OF CONTENTS

	Page
COVER LETTER	**3**
INDEPENDENT PETROLEUM CONSULTANTS' CONSENT	**5**
INTRODUCTION	**6**
SEC RESERVES DEFINITIONS	**8**
AUDIT PROCEDURE	**11**
PRODUCT PRICE AND MARKET FORECASTS	**14**
APPENDIX I	
Certificates of Qualification	**15**

April 26, 2022 11:16:22

April 22, 2022

Project 1223283

Ing. Ángel Cid Munguía
Director General de Pemex Exploración y Producción

Pemex Exploración y Producción
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 41
Colonia Verónica Anzures
Alcaldía Miguel Hidalgo
11300 Ciudad de México, México

Ing. Ángel Cid Munguía:

Re: Pemex Exploración y Producción
Proved Reserves Audit – SEC Reserves Definitions
Activo de Producción Poza Rica-Altamira
Effective December 31, 2021

At the request of Pemex Exploración y Producción (the "Company"), a wholly owned subsidiary of Petróleos Mexicanos (Pemex), GLJ Ltd. (GLJ) has conducted a reserves audit of the proved reserves estimates of certain oil and gas properties owned by the United Mexican States. The effective date of the proved reserves is December 31, 2021 and the reserves audit was completed on February 11, 2022. The Company has represented that these properties account for 12.30 percent on a net oil equivalent barrel basis of the Company's net total proved reserves as of the effective date. There are 100 fields associated with the properties reviewed by GLJ, and they are located in the Poza Rica-Altamira business unit in the Northeastern region of Mexico.

The estimates audited by GLJ were prepared by the Company in accordance with the reserves definitions of Regulation S-X Rule 4-10(a) of the U.S. Securities and Exchange Commission (SEC). GLJ's third party reserves audit was prepared for public disclosure by the Company in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

According to the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards) published by the Society of Petroleum Engineers (2019), "An audit is an examination of Reserves information that is conducted for the purpose of expressing an opinion as to whether such Reserves information, in the aggregate, is reasonable and has been estimated by qualified individuals and presented in conformity with generally accepted petroleum engineering and evaluation principles and in compliance with the relevant Reserves definitions".

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. All reserve estimates involve some degree of uncertainty. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal classifications, either proved or unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-classified as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. At the Company's request, this report addresses only the proved reserves attributable to the properties reviewed herein.

The Company provided a table with their reserves estimates by field and all pertinent well and reservoir data such as geological maps, well logs, production and injection history, drill stem tests, workovers, pressure surveys, production tests, fluid analysis, and planned development activities. The proved reserves prepared by the Company for the properties that GLJ reviewed were estimated based on volumetric calculations, decline analysis or material balance methods or by any combination of the aforementioned methods depending on the available data and the significance of the property within the overall corporate portfolio.

The economic parameters such as operating costs, capital costs, process losses, liquid yields, abandonment cost and product pricing provided by the Company were accepted by GLJ without review or verification. Prices, operating and capital costs, including maintenance capital, were provided by the Company.

While the oil and gas industry may be subject to regulatory changes from time to time that could affect an industry participant's ability to recover its reserves, we are not aware of any such governmental actions which would restrict the recovery of the effective date estimated reserves.

GLJ has used all assumptions, data, procedures, and methods that it considers necessary and appropriate to prepare this report. For significant properties with performance-based assignments, GLJ reviewed the volumetric recovery to address the reasonableness of the assignment and development activity considered by the Company. In fields with significant performance and pressure data, the Company maps and geological models were accepted, but in cases where volumetric analysis formed the primary basis for the Company's reserves estimate, GLJ audited Company maps in more detail, including a review of associated geophysical interpretations.

Based on our review, including the data, technical processes and interpretations presented by the Company, it is our opinion that the overall procedures and methodologies utilized by the Company in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by the Company are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards. As in all aspects of oil and gas evaluation, there are uncertainties inherent in the interpretation of engineering and geoscience data; therefore, our conclusions necessarily represent only informed professional judgment.

It is trusted that this audit meets your current requirements. Should you have any questions regarding this analysis, please contact the undersigned.

Yours very truly,

GLJ LTD.

/s/ Patrick A. Olenick, P. Eng.

Patrick A. Olenick, P. Eng.
Vice President

INDEPENDENT PETROLEUM CONSULTANTS' CONSENT

The undersigned firm of Independent Petroleum Consultants of Calgary, Alberta, Canada has prepared an audit of the Pemex Exploración y Producción (the "Company") Mexican oil and gas properties within Activo de Producción Poza Rica-Altamira and hereby gives consent to the use of its name.

In the course of the audit, the Company provided GLJ Ltd. personnel with basic information which included land data, well information, geological information, reservoir studies, estimates of on-stream dates, contract information, current hydrocarbon product prices, operating cost data, capital budget forecasts, financial data and future operating plans.

According to the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards) published by the Society of Petroleum Engineers (2019), "An audit is an examination of Reserves information that is conducted for the purpose of expressing an opinion as to whether such Reserves information, in the aggregate, is reasonable and has been estimated by qualified individuals and presented in conformity with generally accepted petroleum engineering and evaluation principles and in compliance with the relevant Reserves definitions".

Based on our review, including the data, technical processes and interpretations presented by the Company, it is our opinion that the overall procedures and methodologies utilized by the Company in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by the Company are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards.

PERMIT TO PRACTICE
GLJ LTD.

Signature: _____

Date: April 22, 2022

PERMIT NUMBER: P 2066
The Association of Professional Engineers
and Geoscientists of Alberta

APEGA ID# 77134

GLJ LTD.
Corporate Seal

GLJ

INTRODUCTION

GLJ Ltd. (GLJ) was commissioned by Pemex Exploración y Producción (the "Company"), a subsidiary of Petroleos Mexicanos, to prepare a reserves audit of the gross (100 percent working interest) proved reserves and net gas reserves in 100 fields in the Activo de Producción Poza Rica-Altamira. The effective date of the proved reserves is December 31, 2021 and the reserves audit was completed on February 11, 2022. The Political Constitution of the United Mexican States provides that the Mexican nation owns all petroleum and other hydrocarbon reserves for these fields; however, these fields have been assigned to and are currently operated by the Company.

The estimates audited by GLJ were prepared by the Company based on the definitions and disclosure guidelines of the United States Securities and Exchange Commission contained in the Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009, in the Federal Register (SEC regulations). GLJ's third party reserves audit was prepared for public disclosure by the Company in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

According to the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards) published by the Society of Petroleum Engineers (2019), "A Reserves audit is the process of reviewing certain of the pertinent facts interpreted and assumptions made that have resulted in an estimate of Reserves and/or Reserves information prepared by others and the rendering of an opinion about the appropriateness of the methodologies used, the adequacy and quality of the data relied upon, the depth and thoroughness of the Reserves estimation process, the categorization of Reserves appropriate to the relevant definitions used, and the reasonableness of the estimated Reserves quantities and/or the Reserves information." (section 2.2 (g)). Reserves Information may consist of various estimates pertaining to the extent and value of petroleum properties.

Based on our review, including the data, technical processes and interpretations presented by the Company, it is our opinion that the overall procedures and methodologies utilized by the Company in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by the Company are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards.

For the reserves and income projections, the Company stated they used unweighted arithmetic average prices in effect at the first day of the month during the 12-month period prior to December 31, 2021 (the effective date), unless prices were defined by contractual arrangements, as required by the SEC regulations. Reserves were estimated by the Company to the economic limit of production. The following table sets forth the total proved net after royalty reserves under constant prices and costs as estimated by the Company attributable to the properties that GLJ reviewed:

NET 1P (TOTAL PROVED) RESERVES ESTIMATED BY PEMEX EXPLORACIÓN Y PRODUCCIÓN

Estimated Net Proved Reserves Audited by GLJ Ltd.

Attributable to Certain Properties—Activo de Producción Poza Rica-Altamira

As of December 31, 2021

Category	Oil[1] (MMbbl)	Gross Gas[2] (MMMcf)	Plant Inlet Gas[3] (MMMcf)	Condensate[4] (MMbbl)	Plant Liquids[5] (MMbbl)	Dry Gas[6] (MMboe)	BOE[7] (MMboe)
Proved Developed Producing.....	121.74	226.20	152.80	0.00	5.33	143.35	154.64
Proved Developed Non-Producing	100.21	227.33	139.67	0.00	4.13	132.00	129.72
Proved Undeveloped.....	460.60	1084.48	803.56	1.31	17.32	772.85	627.84
Total Proved.....	682.55	1538.01	1096.04	1.31	26.78	1048.20	912.19

Notes

(1) Oil is produced oil and liquids separated from gas in the field
(2) Gross Gas is gas produced before any losses for fuel use, venting, transporting or plant shrinkage, net of re-injection
(3) Plant Inlet Gas is gas volumes measured at plant inlet, that is, gas in the reservoirs to be produced after shrinkage resulting from field separation and flaring, net of re-injection
(4) Condensate is the liquid volume recovered from the gas stream during the compression and dehydration stages of processing
(5) Plant liquids are liquid volumes recovered from the gas stream through the processing plants
(6) Dry Gas is gas after sweetening and removal of condensate and plant liquids and adjustment for re-injection and fuel losses. Units in barrels of oil equivalent using gas conversion factors provided by the Company
(7) Barrels of oil equivalent were estimated assuming property specific ratio based on sales gas heating values provided by the Company

Liquid hydrocarbons are expressed in millions of barrels (MMbbl) and gas volumes are expressed in billions of cubic feet (MMMcf) at the official temperature and pressure bases of the areas in which the gas reserves are located. The net remaining reserves are also shown herein on an equivalent unit (boe) basis wherein natural gas is converted to oil equivalent barrels using a specific factor for each field. MMboe represents million barrels of oil equivalent.

GLJ notes that the Company has represented that its management of the produced fluids ends at the inlet of the gas processing plants. The reserves estimates include estimates of oil, plant condensate, plant inlet gas, sales gas, natural gas liquids and oil equivalent totals.

As the Company has represented that all subsurface hydrocarbons belong to the United Mexican States and given that the Company has also represented that it has been assigned a 100 percent interest in the audited properties by the United Mexican States, gross and net reserves are equal.

The Audit Procedure section outlines general procedures used in preparing this audit.

SEC RESERVES DEFINITIONS

The following definitions are excerpts from Regulation S-X 210.4-10. Portions of these definitions within square parentheses, [ ], have been transposed from other sections of Regulation S-X 210.4-10 to improve readability.

Resources

Resources are quantities of oil and gas estimated to exist in naturally occurring accumulations. A portion of the resources may be estimated to be recoverable, and another portion may be considered to be unrecoverable. Resources include both discovered and undiscovered accumulations.

Reserves

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce or a revenue interest in the production, installed means of delivering oil and gas or related substances to market, and all permits and financing required to implement the project.

Note: Reserves should not be assigned to adjacent reservoirs isolated by major, potentially sealing, faults until those reservoirs are penetrated and evaluated as economically producible. Reserves should not be assigned to areas that are clearly separated from a known accumulation by a non-productive reservoir (i.e. , absence of reservoir, structurally low reservoir, or negative test results). Such areas may contain prospective resources (i.e., potentially recoverable resources from undiscovered accumulations).

Proved Oil and Gas Reserves

Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.

(i) The area of the reservoir considered as proved includes:

  (A) The area identified by drilling and limited by fluid contacts, if any, and

  (B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.

(ii) In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.

(iii) Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.

(iv) Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:

  (A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and

  (B) The project has been approved for development by all necessary parties and entities, including governmental entities.

(v) Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each

month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

Developed Oil and Gas Reserves

Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

(i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and

(ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

Undeveloped Oil and Gas Reserves

Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

(i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.

(ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstances, justify a longer time.

(iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir [see Other Definitions below], or by other evidence using reliable technology establishing reasonable certainty.

Other Pertinent Definitions

Analogous Reservoir

Analogous reservoirs, as used in resources assessments, have similar rock and fluid properties, reservoir conditions (depth, temperature, and pressure) and drive mechanisms, but are typically at a more advanced stage of development than the reservoir of interest and thus may provide concepts to assist in the interpretation of more limited data and estimation of recovery. When used to support proved reserves, an “analogous reservoir” refers to a reservoir that shares the following characteristics with the reservoir of interest:

(i) Same geological formation (but not necessarily in pressure communication with the reservoir of interest);

(ii) Same environment of deposition;

(iii) Similar geological structure; and

(iv) Same drive mechanism.

Reasonable Certainty

If deterministic methods are used, reasonable certainty means a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability that the quantities actually recovered will equal or exceed the estimate. A high degree of confidence exists if the quantity is much more likely to be achieved than not, and, as changes due to increased availability of geoscience (geological, geophysical, and geochemical), engineering, and economic data are made to estimated ultimate recovery (EUR) with time, reasonably certain EUR is much more likely to increase or remain constant than to decrease.

Reliable Technology

Reliable technology is a grouping of one or more technologies (including computational methods) that has been field tested and has been demonstrated to provide reasonably certain results with consistency and repeatability in the formation being evaluated or in an analogous formation.

Reservoir

A porous and permeable underground formation containing a natural accumulation of producible oil and/or gas that is confined by impermeable rock or water barriers and is individual and separate from other reservoirs.

AUDIT PROCEDURE

The following outlines the methodology employed by GLJ in conducting the audit of the Company's oil and gas proved reserves attributed to the properties in Activo de Producción Poza Rica-Altamira. This audit has been prepared in accordance with definitions and standards under the U.S. Financial Accounting Standard Board (FASB) policies and legal requirements of the U.S. Securities and Exchange Commission (SEC).

INTEREST DESCRIPTIONS

The Company provided GLJ with current land interest information.

The Company has represented that all subsurface hydrocarbons belong to the United Mexican States, and that the Company has been assigned a 100 percent interest in the audited properties by the United Mexican States; therefore, gross and net reserves are equal. The cash flow and production forecasts were limited by economic limits not by a lease expiry.

DATA PROVIDED

The Company provided a table with their reserves estimates by field. Additionally, all pertinent well, reservoir and economic data such as geological maps, well logs, production and injection history, drill stem tests, workovers, pressure surveys, production tests, fluid analysis, planned development activities, operating expenses, capital costs, abandonment cost, process losses, liquid yields, etc., were provided by the Company.

TECHNICAL REVIEW

GLJ performs a bottoms-up analysis where individual properties are audited. Auditors review historical production, well activity, mapping, pressure data and development plans as well as the evaluation approach used by the Company. Meetings with the Company were held to determine the Company's view of the reservoirs and technical justification for future development.

The proved reserves prepared by the Company for the properties that GLJ reviewed were estimated based on volumetric calculations, decline analysis or material balance methods or by any combination of the aforementioned methods depending on the available data and the significance of the property within the overall corporate portfolio. Where possible, performance based reserves assignments were made by the Company. For significant properties with performance based assignments, GLJ reviewed the volumetric recovery to address the reasonableness of the assignment and development activity considered by the Company. In fields with significant performance and pressure data, the Company maps and geological models were accepted, but in cases where volumetric analysis formed the primary basis for the Company's reserves estimate, GLJ audited Company maps in more detail, including a review of associated geophysical interpretations.

Data used in the audit were obtained from Company personnel and Company files. In the preparation of our report, GLJ accepted as presented and have relied, without independent verification, upon a variety of information furnished by the Company such as interests and burdens, production, product transportation and marketing and sales agreements, capital costs, operating expense data, and capital cost estimates. If in the course of the audit, the validity or sufficiency of any material information was brought into question, GLJ did not rely on such information until such concerns were satisfactorily resolved.

The economic parameters such as operating costs, capital costs, process losses, liquid yields, abandonment cost and product pricing provided by the Company were accepted by GLJ without review or verification. Prices, operating and capital costs, including maintenance capital, were provided by the Company.

Reserves were estimated by the Company to the economic limit of production.

MARKETABLE PRODUCTS

Recoverable reserves were estimated by the Company to the following products:

Oil	Produced oil and liquids separated from gas in the field
Condensate	Condensate is the liquid volume recovered from the gas stream during the compression and dehydration stages of processing
Plant Liquids	Plant liquids are liquid volumes recovered from the gas stream through the processing plants
Plant Inlet Gas	Gas volumes measured at plant inlet, that is, gas in the reservoirs to be produced after shrinkage resulting from field separation and flaring, net of re-injection
Dry Gas	Gas after sweetening and removal of condensate and plant liquids and adjustment for re-injection and fuel losses

GLJ notes that the Company has represented to GLJ that its management of the produced fluids ends at the inlet of the gas processing plants.

The Company also presented quantities of hydrocarbons in barrels of oil equivalent (boe) using their own conversion factors.

LIST OF ABBREVIATIONS

AOF	absolute open flow
bbl	barrels
BIIP	bitumen initially-in-place
boe	barrel of oil equivalent, in this evaluation determined using 5.2 Mcf/boe for gas, 1 bbl/boe for all liquids, and 0 boe for sulphur
bopd	barrels of oil per day
Btu	British thermal units
bwpd	barrels of water per day
DSU	drilling spacing unit
GCA	gas cost allowance
GIIP	gas initially-in-place
GOC	gas-oil contact
GOR	gas-oil ratio
GORR	gross overriding royalty
GWC	gas-water contact
Mbbl	thousand barrels
Mboe	thousand boe
Mcf	thousand cubic feet of gas at standard conditions
Mcfe	thousand cubic feet of gas equivalent
Mlt	thousand long tons
M$	thousand dollars
MM$	million dollars
MMbbl	million barrels
MMboe	million boe
MMBtu	million British thermal units
MMcf	million cubic feet of gas at standard conditions
MMMcf	billion cubic feet of gas at standard conditions
MRL	maximum rate limitation
Mstb	thousand stock tank barrels
MMstb	million stock tank barrels
NGL	natural gas liquids (ethane, propane, butane and condensate)
NPI	net profits interest
OIIP	oil initially-in-place
ORRI	overriding royalty interest
OWC	oil-water contact
P&NG	petroleum and natural gas
PIIP	petroleum initially-in-place
psia	pounds per square inch absolute
psig	pounds per square inch gauge
PVT	pressure-volume-temperature
RLI	reserves life index, calculated by dividing reserves by the forecast of first year production
scf	standard cubic feet
sge	sales gas equivalent – if presented in this evaluation, determined using 1 barrel of oil or natural gas liquid = 5.2 Mcfe; 0 for sulphur
stb	stock tank barrel
WI	working interest
WTI	West Texas Intermediate

PRODUCT PRICE AND MARKET FORECASTS
December 31, 2021

The Company provided prices for oil, condensate and gas on a field basis. In the economic forecasts, the gas prices presented are well head price in terms of sales gas. As the gas price received is assumed to include value for plant liquids, no additional revenue is forecast for plant liquids.

CERTIFICATES OF QUALIFICATION

Patrick A. Olenick

CERTIFICATION OF QUALIFICATION

I, Patrick A. Olenick, Professional Engineer, 1920, 401 – 9th Avenue S.W., Calgary, Alberta, Canada hereby certify:

1. That I am an employee of GLJ Ltd., which company did prepare a detailed analysis of certain Mexican oil and gas properties of Pemex Exploración y Producción (the "Company"). The effective date of this evaluation is December 31, 2021.
2. That I do not have, nor do I expect to receive any direct or indirect interest in the securities of the Company or its affiliated companies.
3. That I attended the University of Calgary where I graduated with a Bachelor of Science Degree in Mechanical Engineering in 2003; that I am a Registered Professional Engineer in the Province of Alberta; and, that I have in excess of nineteen years experience in engineering studies relating to oil and gas fields.
4. That a personal field inspection of the properties was not made; however, such an inspection was not considered necessary in view of the information available from public information and records, the files of the Company, and the appropriate provincial regulatory authorities.

April 22, 2022

GLJ

Exhibit 15.3

DEGOLYER AND MACNAUGHTON
5001 SPRING VALLEY ROAD
SUITE 800 EAST
DALLAS, TEXAS 75244

April 22, 2022

Ing. Octavio Romero Oropeza
Director General
Petróleos Mexicanos
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 44
Colonia Verónica Anzures
Alcaldía Miguel Hidalgo
11300 Ciudad de México, México

Dear Ing. Octavio Romero Oropeza:

We hereby consent to the references to DeGolyer and MacNaughton as set forth under the headings "Presentation of Information Concerning Reserves," "Item 4. Information on the Company – Business Overview – Exploration and Production – Reserves," and "Item 19. Exhibits. Documents filed as exhibits to this Form 20-F" in the Annual Report on Form 20-F of Petróleos Mexicanos (PEMEX) for the year ended December 31, 2021 (the Form 20-F), and to the filing as Exhibit 15.4 to the Form 20-F of our report of third party dated April 22, 2022, describing our independent reserves evaluation of the estimated net proved oil, condensate, gas, and oil equivalent reserves that PEMEX has represented are owned by the United Mexican States (México) as of January 1, 2022, for certain fields located in the Activos de Producción Bellota-Jujo and Samaria-Luna and the Activos de Producción Cantarell and Ku-Maloob-Zaap, which include reserves that PEMEX has represented it has the right to extract and sell. These estimates were prepared in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the United States Securities and Exchange Commission.

Very truly yours,

DeGolyer and MacNaughton

DeGOLYER and MacNAUGHTON
Texas Registered Engineering Firm F-716

Exhibit 15.4

DeGolyer and MacNaughton
5001 Spring Valley Road
Suite 800 East
Dallas, Texas 75244

April 22, 2022

Ing. Ángel Cid Munguía
Director General de Pemex Exploración y Producción
Pemex Exploración y Producción
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 41
Colonia Verónica Anzures
Alcaldía Miguel Hidalgo
11300 Ciudad de México, México

Dear Ing. Cid Munguía:

Pursuant to your request, this report of third party presents an independent evaluation, as of January 1, 2022, of the estimated net proved oil, condensate, gas, and oil equivalent reserves of certain properties that Pemex Exploración y Producción (PEP) has represented are owned by the United Mexican States. These properties are located in the Activos de Producción Bellota-Jujo and Samaria-Luna and the Activos de Producción Cantarell and Ku-Maloob-Zaap in the United Mexican States. This evaluation was completed on April 22, 2022. PEP has represented that these properties account for 48.6 percent on a net oil equivalent barrel basis of PEP's net proved reserves as of January 1, 2022, and that PEP's net proved reserves estimates were prepared in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the United States Securities and Exchange Commission (SEC). It is our opinion that the procedures and methodologies employed by PEP for the preparation of its proved reserves estimates as of January 1, 2022, comply with the current requirements of the SEC. We have reviewed information provided by PEP that it represents to be PEP's estimates of the net reserves, as of January 1, 2022, for the same properties as those which we evaluated. This report was prepared in accordance with guidelines specified in Item 1202 (a)(8) of Regulation S–K and is to be used for inclusion in certain SEC filings by PEP.

PEP has represented that all subsurface hydrocarbons belong to the United Mexican States as stated in the *Ley de Hidrocarburos* (Hydrocarbons Law). At the request of PEP, this report also includes estimates prepared by PEP of its natural gas liquids (plant liquids) reserves; however, PEP has represented that PEP's management of the properties stops at the inlet of the gas processing plants; therefore, PEP has no right to those quantities presented herein.

Reserves estimates included herein are expressed as net reserves as represented by PEP. Gross reserves are defined as the total estimated petroleum remaining to be produced from these properties after December 31, 2021. Net reserves are defined as that portion of the gross reserves attributable to the interests owned by the United Mexican States and held by PEP after deducting all interests held by others, without consideration of royalties and other fiscal or contractual terms.

Estimates of reserves should be regarded only as estimates that may change as further production history and additional information become available. Not only are such reserves estimates based on that information which is currently available, but such estimates are also subject to the uncertainties inherent in the application of judgmental factors in interpreting such information.

Information used in the preparation of this report was obtained from PEP. In the preparation of this report we have relied, without independent verification, upon information furnished by PEP with respect to the property interests being evaluated, production from such properties, current costs of operation and development, current prices for production, agreements relating to current and future operations and sale of production, and various other information and data that were accepted as represented. A field examination was not considered necessary for the purposes of this report.

Definition of Reserves

Petroleum reserves included in this report are classified as proved. Only proved reserves have been evaluated for this report. Reserves classifications used in this report are in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the SEC. Reserves are judged to be economically producible in future years from known reservoirs under existing economic and operating conditions and assuming continuation of current regulatory practices using conventional production methods and equipment. In the analyses of production-decline curves, reserves were estimated only to the limit of economic rates of production under existing economic and operating conditions using prices and costs consistent with the effective date of this report, including consideration of changes in existing prices provided only by contractual arrangements but not including escalations based upon future conditions. The petroleum reserves are classified as follows:

Proved oil and gas reserves – Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.

(i) The area of the reservoir considered as proved includes:
(A) The area identified by drilling and limited by fluid contacts, if any, and (B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.

(ii) In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.

(iii) Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.

(iv) Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:

(A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and (B) The project has been approved for development by all necessary parties and entities, including governmental entities.

(v) Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

Developed oil and gas reserves – Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

(i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and

(ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

Undeveloped oil and gas reserves – Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

(i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.

(ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstances justify a longer time.

> (iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir, as defined in [section 210.4–10 (a) Definitions], or by other evidence using reliable technology establishing reasonable certainty.

Methodology and Procedures

Estimates of reserves were prepared by the use of appropriate geologic, petroleum engineering, and evaluation principles and techniques that are in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the SEC and with practices generally recognized by the petroleum industry as presented in the publication of the Society of Petroleum Engineers entitled "Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (revised June 2019) Approved by the SPE Board on 25 June 2019". The method or combination of methods used in the analysis of each reservoir was tempered by experience with similar reservoirs, stage of development, quality and completeness of basic data, and production history.

Based on the current stage of field development, production performance, the development plans provided by PEP, and analyses of areas offsetting existing wells with test or production data, reserves were classified as proved.

The undeveloped reserves estimated herein were based on opportunities identified in the plan of development provided by PEP.

PEP has represented that its senior management is committed to the development plan provided by PEP and that PEP has the financial capability to execute the development plan, including the drilling and completion of wells and the installation of equipment and facilities.

When applicable, the volumetric method was used to estimate the original oil in place (OOIP) and original gas in place (OGIP). Structure maps were prepared to delineate each reservoir, and isopach maps were constructed to estimate reservoir volume. Electrical logs, radioactivity logs, core analyses, and other available data were used to prepare these maps as well as to estimate representative values for porosity and water saturation. When adequate data were available and when circumstances justified, material-balance methods were used to estimate OOIP and OGIP.

Estimates of ultimate recovery were obtained after applying recovery factors to OOIP and OGIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, and the production histories. When applicable, material balance and other engineering methods were used to estimate recovery factors based on an analysis of reservoir performance, including production rate, reservoir pressure, and reservoir fluid properties.

For depletion-type reservoirs or those whose performance disclosed a reliable decline in producing-rate trends or other diagnostic characteristics, reserves were estimated by the application of appropriate decline curves or other performance relationships.

In certain cases, reserves were estimated by incorporating elements of analogy with similar wells or reservoirs for which more complete data were available.

In the evaluation of undeveloped reserves, type-well analysis was performed using well data from analogous reservoirs for which more complete historical performance data were available.

For cases where history-matched dynamic models were available and applicable, model results were used to estimate recovery factors and reserves production forecasts.

Data provided by PEP from wells drilled through December 31, 2021, and made available for this evaluation were used to prepare the reserves estimates herein. These reserves estimates were based on consideration of monthly production data available through December 2021. Cumulative production, as of December 31, 2021, was deducted from the estimated gross ultimate recovery to estimate gross reserves.

Oil and condensate reserves estimated herein are to be recovered by normal field separation. Plant liquids reserves estimated herein include propane, butane, and pentanes and heavier fractions ($C5_+$) and are the result of low-temperature plant processing. Oil, condensate, and plant liquids reserves included in this report are expressed in millions of barrels (10^6bbl). In these estimates, 1 barrel equals 42 United States gallons.

Gas quantities estimated herein are expressed as natural gas, sales gas, and dry gas. Natural gas is the total gas produced from the reservoir prior to processing or separation and includes all nonhydrocarbon components. Sales gas is defined as the total gas to be produced from the reservoirs, measured at the inlet to the processing plant, after reduction for injection, fuel usage, flare, and shrinkage resulting from field separation. Dry gas is defined as the total gas to be produced from the reservoirs, measured at the tailgate of the processing plant, after reduction for injection, fuel usage, flare, and shrinkage resulting from field separation and plant

processing. Gas reserves estimated herein are reported as sales gas and dry gas. Gas quantities are expressed at a temperature base of 20 degrees Celsius (°C) and at a pressure base of 1 atmosphere (atm). Gas quantities included in this report are expressed in billions of cubic feet ($10^9 ft^3$).

Gas quantities are identified by the type of reservoir from which the gas will be produced. Nonassociated gas is gas at initial reservoir conditions with no oil present in the reservoir. Associated gas is both gas-cap gas and solution gas. Gas-cap gas is gas at initial reservoir conditions and is in communication with an underlying oil zone. Solution gas is gas dissolved in oil at initial reservoir conditions. Gas quantities estimated herein include both associated and nonassociated gas.

Condensate, sales gas, plant liquids, and dry gas reserves were estimated by applying yields and shrinkages, provided by PEP, to estimates of natural gas quantities.

At the request of PEP, estimated dry gas quantities, defined as the total gas to be produced from the reservoirs, measured at the tailgate of the processing plant, after reduction for injection, fuel usage, flare, and shrinkage resulting from field separation and plant processing, were converted to dry gas equivalent to liquids on a field-by-field basis using an energy equivalent factor based on the dry gas composition of each field, as provided by PEP. In addition, natural gas quantities estimated herein were converted to oil equivalent on a field-by-field basis using an energy equivalent factor reflecting the yields and shrinkages of each field, as provided by PEP.

PEP has represented that the development activities provided and evaluated herein were approved internally within PEP. In general, development activities provided by PEP are scheduled to initiate within 5 years of the as-of date of this report for activities associated with proved undeveloped reserves. However, certain development activities associated with proved undeveloped reserves are scheduled to be initiated more than 5 years after initial disclosure.

Primary Economic Assumptions

This report has been prepared using initial prices, expenses, and costs provided by PEP in United States dollars (U.S.$). Future prices were estimated using guidelines established by the SEC and the Financial Accounting Standards Board (FASB). The following economic assumptions were used for estimating the reserves reported herein:

Oil and Condensate Prices

PEP has represented that the oil and condensate prices were based on a reference price, calculated as the unweighted arithmetic average of the first-day-of-the-month price for each month within the 12-month period prior to the end of the reporting period, unless prices are defined by contractual agreements. As represented by PEP, the reference price utilized is the Mexican Mix reference price, which is composed of the Istmo, Maya, and Olmeca reference prices and is calculated based on a formula that includes the West Texas Sour, Light Louisiana Sweet, Brent, Oman, and Dubai reference prices. PEP supplied differentials by field to an average Mexican Mix reference price of U.S.$64.43 per barrel and the prices were held constant thereafter. The volume-weighted average adjusted prices attributable to the estimated proved reserves over the lives of the properties were U.S.$58.86 per barrel of oil and U.S.$36.74 per barrel of condensate. These prices were not escalated for inflation.

Gas Prices

PEP has represented that the gas prices were based on a reference price, calculated as the unweighted arithmetic average of the first-day-of-the-month price for each month within the 12-month period prior to the end of the reporting period, unless prices are defined by contractual agreements. Each field’s calorific value, which includes plant liquids, was used to determine each field’s gas price. The volume-weighted average adjusted price attributable to the estimated proved reserves over the lives of the properties was U.S.$6.32 per thousand cubic feet of gas. These prices were not escalated for inflation.

Operating Expenses, Capital Costs, and Abandonment Costs

Operating expenses and capital costs were based on information provided by PEP and were used in estimating future costs required to operate the properties and in estimating costs for future development. In certain cases, future expenditures, either higher or lower than current expenditures, may have been used because of anticipated changes in operating conditions, but no general escalation that might result from inflation was applied. Abandonment costs, which are those costs associated with the removal of equipment, plugging of wells, and reclamation and restoration associated with the abandonment, were provided by PEP and were not adjusted for inflation. Estimates of operating expenses, capital costs, and abandonment costs were considered in determining the economic viability of the undeveloped reserves estimated herein.

In our opinion, the information relating to estimated proved reserves of oil, condensate, and gas contained in this report has been prepared in accordance with Paragraphs 932-235-50-4, 932-235-50-6, 932-235-50-7, and 932-235-50-9 of the Accounting Standards Update 932-235-50, *Extractive Industries – Oil and Gas (Topic 932): Oil and Gas Reserve Estimation and Disclosures* (January 2010) of the FASB and Rules 4–10(a)(1)–(32) of Regulation S–X and Rules 302(b), 1201, 1202(a) (1), (2), (3), (4), (8), and 1203(a) of Regulation S–K of the SEC; provided, however, that (i) estimates of proved developed and proved undeveloped reserves are not presented at the beginning of the year and (ii) certain development activities associated with proved reserves are scheduled to be initiated more than 5 years after initial disclosure.

To the extent the above-enumerated rules, regulations, and statements require determinations of an accounting or legal nature, we, as engineers, are necessarily unable to express an opinion as to whether the above-described information is in accordance therewith or sufficient therefor.

Summary of Conclusions

PEP has represented that its estimated net proved reserves attributable to the evaluated properties were based on the definition of proved reserves of the SEC. PEP's estimates of the net proved quantities and reserves, as of January 1, 2022, attributable to these properties, which represent 48.6 percent of PEP's reserves on a net oil equivalent basis, are summarized as follows, expressed in millions of barrels (10^6bbl), billions of cubic feet (10^9ft^3), and millions of barrels of oil equivalent (10^6boe):

	Estimated by PEP as of January 1, 2022							
		Net Proved Reserves						
Properties Evaluated by DeGolyer and MacNaughton	Natural Gas Quantities (10^9ft^3)	Oil (10^6bbl)	Condensate (10^6bbl)	Sales Gas (10^9ft^3)	Plant Liquids (10^6bbl)	Dry Gas (10^9ft^3)	Dry Gas Equivalent To Liquids (10^6boe)	Oil Equivalent (10^6boe)
Proved Developed	1,962.2	2,369.2	10.7	1,557.5	109.2	1,200.1	230.7	2,719.9
Proved Undeveloped	293.9	809.0	1.5	257.5	18.4	194.4	37.4	866.3
Total Proved	**2,256.1**	**3,178.2**	**12.3**	**1,815.0**	**127.6**	**1,394.5**	**268.1**	**3,586.2**

Notes:

1. Reserves were estimated to the economic limit and did not consider the expiration of the contracts.
2. Dry gas equivalent to liquids was calculated based on dry gas reserves.
3. Dry gas reserves estimated herein were converted to dry gas equivalent to liquids on a field-by-field basis using an energy equivalent factor reflecting the dry gas composition of each field, as provided by PEP.
4. Oil equivalent was calculated based on oil reserves and natural gas quantities.
5. Natural gas quantities estimated herein were converted to oil equivalent on a field-by-field basis using an energy equivalent factor reflecting the yields and shrinkages of each field, as provided by PEP.
6. PEP has represented that totals may vary due to rounding.

In comparing the detailed net proved reserves estimates prepared by DeGolyer and MacNaughton and by PEP, differences have been found, both positive and negative, resulting in an aggregate difference of 9.8 percent when compared on the basis of net oil equivalent barrels. It is DeGolyer and MacNaughton's opinion that the net proved reserves estimates prepared by PEP on the properties evaluated and referred to above, when compared on the basis of net equivalent barrels, in aggregate, are reasonable.

While the oil and gas industry may be subject to regulatory changes from time to time that could affect an industry participant's ability to recover its reserves, we are not aware of any such governmental actions which would restrict the recovery of the January 1, 2022, estimated reserves.

DeGolyer and MacNaughton is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1936. DeGolyer and MacNaughton does not have any financial interest, including stock ownership, in PEP. Our fees were not contingent on the results of our evaluation. This report has been prepared at the request of PEP. DeGolyer and MacNaughton has used all assumptions, data, procedures, and methods that it considers necessary and appropriate to prepare this report.

Submitted,

DeGolyer and MacNaughton

DeGOLYER and MacNAUGHTON
Texas Registered Engineering Firm F-716

/s/ Federico Dordoni
Federico Dordoni, P.E.
Senior Vice President
DeGolyer and MacNaughton

CERTIFICATE of QUALIFICATION

I, Federico Dordoni, Petroleum Engineer with DeGolyer and MacNaughton, 5001 Spring Valley Road, Suite 800 East, Dallas, Texas 75244, U.S.A., hereby certify:

1. That I am a Senior Vice President of DeGolyer and MacNaughton, which firm did prepare the report of third party addressed to PEP dated April 22, 2022, and that I, as Senior Vice President, was responsible for the preparation of this report of third party.

2. That I attended Buenos Aires Institute of Technology (ITBA) University, and that I graduated with a degree in Petroleum Engineering in the year 2004; that I am a Registered Professional Engineer in the State of Texas; that I am a member of the Society of Petroleum Engineers and the Society of Petroleum Evaluation Engineers; and that I have in excess of 17 years of experience in oil and gas reservoir studies and reserves evaluations.

/s/ Federico Dordoni
Federico Dordoni, P.E.
Senior Vice President
DeGolyer and MacNaughton

Exhibit 15.5

April 22, 2022

Ing. Octavio Romero Oropeza
Director General
Petróleos Mexicanos
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 44
Colonia Verónica Anzures
Alcaldía Miguel Hidalgo
11300 Ciudad de México, México

Re: Consent of Independent Petroleum Engineer

Dear Ing. Octavio Romero Oropeza:

We refer to our report, entitled "Certification of the Proved Reserves of Pemex Producción y Exploración in 46 Fields in Mexico as of December 31, 2021" (the "Report").

We hereby consent to the references to Sproule International Limited and Sproule Mexico S.A. de C.V. ("Sproule") and to the inclusion of, and information derived from the Report dated as of April 22, 2022, in Petróleos Mexicanos' ("Pemex") annual report on Form 20-F for the year ended December 31, 2021 (the "Annual Report") and to the inclusion of our Report as Exhibit 15.6 to the Annual Report. We have audited the estimates of Pemex's proved oil, condensate, natural gas, and oil equivalent reserves as of December 31, 2021, for the 46 fields located in the Macuspana-Muspac and Cinco Presidentes business units. These estimates were prepared by Pemex Exploración y Producción in accordance with the reserves definitions of Regulation S-X Rule 4-10(a) of the U.S. Securities and Exchange Commission.

Yours truly,

Sproule International Limited and Sproule México S.A. de C.V.

/s/ Gary R. Finnis

Gary R. Finnis, P.Eng.
Senior Manager, Reservoir Services

Exhibit 15.6

April 22, 2022

Ing. Ángel Cid Munguía
Director General de Pemex Exploración y Producción

Pemex Exploración y Producción
Avenida Marina Nacional No. 329
Torre Ejecutiva, Piso 41
Colonia Verónica Anzures, C.P. 11300
Alcaldía Miguel Hidalgo, Ciudad de México, México

Re: Certification of the Proved Reserves of Pemex Producción y Exploración in 46 fields in Mexico as of December 31, 2021

Dear Ing. Ángel Cid Munguía:

Sproule International Limited and Sproule Mexico S.A. de C.V. ("Sproule") has been engaged by Pemex Exploración y Producción ("PEP") to evaluate the proved reserves in 46 fields (the "Fields") in the United Mexican States ("Mexico"), as of December 31, 2021, and to prepare a report as to its findings (the "Report"). The Fields evaluated herein are located in Macuspana-Muspac and Cinco Presidentes business units. PEP has represented it operates the Fields evaluated herein under the terms of allocations with the regulatory agency of Mexico (Comisión Nacional de Hidrocarburos (CNH)). This evaluation was completed on March 31, 2022. PEP has represented that these properties account for 2.6 percent on a net oil equivalent barrel basis of PEP's net proved reserves as of January 1, 2022.

PEP has represented that these net proved reserves estimates were prepared in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the United States Securities and Exchange Commission (SEC). It is our opinion that the procedures and methodologies employed by PEP for the preparation of its proved reserves estimates as of January 1, 2022, comply with the current requirements of the SEC. We have reviewed information provided by PEP that it represents to be PEP's estimates of the net reserves, as of January 1, 2022, for the same properties as those which we evaluated. This report was prepared in accordance with guidelines specified in Item 1202 (a)(8) of Regulation S–K and is to be used for inclusion in certain SEC filings by PEP.

140 Fourth Avenue SW, Suite 900
Calgary, AB, Canada T2P 3N3
Sproule.com
T +1 403 294 5500 F +1 403 294 5590 TF +1 877 777 6135

PEP has represented that all subsurface hydrocarbons belong to Mexico as stated in the Mexican *Ley de Hidrocarburos* (Hydrocarbon Law). At the request of PEP, we have also included in this certification letter estimates prepared by PEP of its dry gas equivalent to liquid and natural gas liquids (plant liquids) reserves; however, PEP has represented that its management of the properties stops at the inlet of the gas processing plants; therefore, PEP has no right to those quantities estimated herein.

Reserves estimated in this certification letter are expressed as gross reserves. Gross reserves are defined as the total estimated hydrocarbon remaining to be produced from these properties after December 31, 2021. The accuracy of reserves estimates and associated economic analysis is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data provided at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that reservoir and financial performance subsequent to the date of the estimates may necessitate revision. These revisions may be material.

Information used in the preparation of this certification letter was obtained from PEP. In the preparation of this certification letter, we have relied upon information furnished by PEP with respect to the property interests being evaluated, production from such properties, current costs of operation and development, current prices for production, agreements relating to current and future operations and sale of production, and various other information and data that were accepted as represented.

In the preparation of this evaluation, field inspections of the properties were not performed. No material information regarding the reserves evaluation would have been obtained by an on-site visit.

Definition of Reserves

Petroleum reserves included in this report are classified as proved. Only proved reserves have been evaluated for this report. Reserves classifications used in this report are in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the SEC. Reserves are judged to be economically producible in future years from known reservoirs under existing economic and operating conditions and assuming continuation of current regulatory practices using conventional production methods and equipment. In the analyses of production-decline curves, reserves were estimated only to the limit of economic rates of production under existing economic and operating conditions using prices and costs consistent with the effective date of this report, including consideration of changes in existing prices provided only by contractual arrangements but not including escalations based upon future conditions. The petroleum reserves are classified as follows:

Proved oil and gas reserves

Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.

i. The area of the reservoir considered as proved includes: (A) The area identified by drilling and limited by fluid contacts, if any, and (B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.

ii. In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.

iii. Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.

Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:

(A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and

(B) The project has been approved for development by all necessary parties and entities, including governmental entities.

iv. Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

Developed oil and gas reserves

Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

i. Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and

ii. Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

Undeveloped oil and gas reserves

Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion. Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.

i. Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years unless the specific circumstances justify a longer time.

ii. Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir, as defined in [section 210.4–10 (a) Definitions], or by other evidence using reliable technology establishing reasonable certainty.

Methodology and Procedures

Estimates of reserves were prepared by the use of appropriate geologic, petroleum engineering, and evaluation principles and techniques that are in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the SEC and with practices generally recognized by the petroleum industry as presented in the publication of the Society of Petroleum Engineers entitled "Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (revised June 2019) Approved by the SPE Board on 25 June 2019" and in Monograph 3 and Monograph 4 published by the Society of Petroleum Evaluation Engineers. The method or combination of methods used in the analysis of each reservoir was tempered by experience with similar reservoirs, stage of development, quality and completeness of basic data, and production history.

Based on the current stage of field development, production performance, the development plans provided by PEP, and analyses of areas offsetting existing wells with test or production data, reserves were classified as proved. The undeveloped reserves estimated herein were based on opportunities identified in the development plan provided by PEP.

PEP has represented that its senior management is committed to the development plan provided by PEP and that PEP has the financial capability to execute the development plan, including the drilling and completion of wells and the installation of equipment and facilities.

The technically recoverable oil and natural gas resources were estimated volumetrically or using analogy techniques. Volumetric reserves were estimated using the geological models constructed by PEP using a commercial geomodel software. Reservoir rock and fluid property data were obtained from well logs, PVT data and gas analyses either from the pool in question or from a similar reservoir producing from the same zone. Reservoir pressures were derived from drillstem and AOF test data and pressure surveys. Recovery factors for technically recoverable resources were selected from the results of analytical reservoir analyses, or by comparing the reservoir under study with similar reservoirs that have more firmly established recovery factors from extended production histories.

Estimates of ultimate recovery were obtained after applying recovery factors to OOIP and OGIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, and the production histories. In all cases, reserves were estimated by incorporating elements of analogy with similar wells or reservoirs for which more complete data were available and provided by PEP. When applicable, material balance and other engineering methods were used to estimate recovery factors based on an analysis of reservoir performance, including production rate, reservoir pressure, and reservoir fluid properties.

Oil and condensate reserves estimated herein are to be recovered by normal field separation. Plant liquids volumes estimated herein include propane, butane, and pentanes and heavier fractions (C5+). Plant liquids volumes are the result of low-temperature plant processing.

Oil, condensate, and plant liquids volumes reported herein are expressed in thousands of barrels (10^3 bbl). Gas quantities estimated herein are expressed as natural gas, sales gas, and dry gas. Natural gas is the total gas produced from the reservoirs prior to processing or separation and includes all nonhydrocarbon components.

Sales gas is defined as the total gas to be produced from the reservoirs, measured at the inlet of the processing plant, after reduction for injection, fuel usage, flare, and shrinkage resulting from field separation. Dry gas is defined as the total gas to be produced from the reservoirs, measured at the tailgate of the processing plant, after reduction for injection, fuel usage, flare, and shrinkage resulting from field separation and plant processing. Gas reserves estimated herein are reported as sales gas.

Gas quantities estimated herein are expressed at a temperature base of 20 degrees Celsius (°C) and at a pressure base of 1 atmosphere (atm). Gas quantities presented in this certification letter are expressed in millions of cubic feet ($10^6 ft^3$). Gas quantities are identified by the type of reservoir from which the gas will be produced. Non-associated gas is gas at initial reservoir conditions with no crude oil present in the reservoir.

Associated gas includes both gas-cap gas and solution gas. Gas-cap gas is gas at initial reservoir conditions and is in communication with an underlying crude oil zone. Solution gas is gas dissolved in crude oil at initial reservoir conditions. Gas quantities estimated herein include both associated and Non associated gas.

At the request of PEP, dry gas quantities estimated herein were converted to dry gas equivalent to liquids on a field-by-field basis using an energy equivalent factor based on the dry gas composition of each field, as provided by PEP. In addition, natural gas quantities estimated herein were converted to oil equivalent on a field by field basis using an energy equivalent factor reflecting the yields and shrinkages of each field, as provided by PEP.

PEP has represented that the development activities provided and evaluated herein were approved by the CNH, or will be submitted to the CNH as per the terms of the allocations, and that PEP has reasonable certainty that the activities will be approved by the CNH. In general, development activities provided by PEP are scheduled to initiate within 5 years of the effective date of the Report (December 31, 2021) for activities associated with Proved undeveloped reserves. However, certain development activities provided by PEP may have originally been booked in years prior to the as-of date of this certification letter.

At the request of PEP and in conformity with the CNH Reserves Regulation, reserves were estimated to the economic limit and to the end of the allocations. The estimates presented herein considered the commerciality of the estimated reserves, as defined in the Definition of Reserves section of this certification letter, but without consideration of the potential effects of the fiscal terms of the contracts in the estimation of the economic limit.

The oil and natural gas reserves were estimated based on the technically recoverable resources, operating and capital costs and the terms of the fiscal regime. Forecasts of net revenue were prepared by predicting the annual production of reserves, and PEP provided product prices.

The technically recoverable condensate resources were estimated based on estimates of future gas production and future condensate recovery provided by PEP. Annual production was forecast taking into account well deliverability, the status of reservoir depletion, applicable regulatory conditions, and by comparison with other wells in the vicinity producing from similar reservoirs when available.

Gas reserves have been assigned based on confirmation from PEP that there is a market to produce to. The expense has been included in the cash flows for the use of fuel gas.

Solution gas reserves have been assigned based on confirmation from PEP that there is a market to produce for. The expenses for the use of fuel gas have been included in the general maintenance cost provided by PEP.

The net present values of the reserves are presented (on a before income tax basis) in United States dollars and are based on annual projections of net revenue, which were discounted at various rates using the mid-period discounting method. These rates are 5, 10, 15 and 20 percent and undiscounted.

The price forecasts that formed the basis for the revenue projections in the evaluation were based on the constant prices provided by PEP at December 31, 2021

Primary Economic Assumptions

This report has been prepared using initial prices, expenses, and costs provided by PEP in United States dollars ($US). The following economic assumptions were used for estimating the reserves reported herein:

Oil and Condensate Prices

PEP has represented that the oil and condensate prices were based on a reference price, calculated as the unweighted arithmetic average of the first-day-of-the-month price for each month within the 12-month period prior to the end of the reporting period, unless prices are defined by contractual agreements. The average oil and condensate price for the estimated proved reserves for the Fields is $US 57.79 per barrel and $US 21.85 per barrel, respectively. These prices were not escalated for inflation.

Gas Prices

PEP has represented that the gas price was based on a reference price, calculated as the unweighted arithmetic average of the first-day-of-the-month price for each month within the 12-month period prior to the end of the reporting period, unless prices are defined by contractual agreements. The average gas price for the estimated proved reserves for the Fields is $US 5.99 per thousand cubic feet. The gas price was based on gas sales contracts and was not escalated for inflation.

Operating Expenses, Capital Costs, and Abandonment Costs

Estimates of operating expenses, capital costs, and abandonment costs were considered, as appropriate, in determining the economic viability of the developed producing, developed non-producing and the undeveloped reserves estimated herein.

The operating costs and capital costs used in the evaluation were based on parameters provided by PEP. The abandonment, decommissioning and reclamation ("ADR") costs associated with PEP's hydrocarbon exploration, development, production and processing operations in the properties of interest were included in this report. PEP provided complete and accurate estimates of the ADR costs associated with their hydrocarbon exploration, development, production and processing operations, for inclusion in this evaluation of their hydrocarbon assets data and were accepted as represented.

Fiscal Terms

PEP indicated that the Fields are under allocation regime, in which there is no contract model, therefore, in the economic evaluation, elements such as production distribution or cost recovery income were not included. At the request of PEP and in conformity with the CNH Reserves Regulation, no consideration was given to the fiscal terms of the allocations.

Allocation Duration Terms

PEP has represented that the allocations for the Fields evaluated herein expire on December 31, 2034.

In our opinion, the information relating to estimated proved reserves of oil, condensate, and gas contained in this report has been prepared in accordance with Paragraphs 932-235-50-4, 932-235-50-6, 932-235-50-7, and 932-235-50-9 of the Accounting Standards Update 932-235-50, Extractive Industries – Oil and Gas (Topic 932): Oil and Gas Reserve Estimation and Disclosures (January 2010) of the FASB and Rules 4–10(a)(1)–(32) of Regulation S–X and Rules 302(b), 1201, 1202(a) (1), (2), (3), (4), (8), and 1203(a) of Regulation S–K of the SEC; provided, however, that estimates of proved developed and proved undeveloped reserves are not presented at the beginning of the year.

To the extent the above-enumerated rules, regulations, and statements require determinations of an accounting or legal nature, we, as engineers, are necessarily unable to express an opinion as to whether the above-described information is in accordance therewith or sufficient therefor.

Summary of Conclusions

PEP has represented that its estimated net proved reserves attributable to the evaluated properties were based on the definition of proved reserves of the SEC. PEP has represented that its estimates of the gross Proved quantities and reserves, as of January 1, 2022, of the properties evaluated herein are summarized as follows, expressed in billions of cubic feet (10^9 ft^3), millions of barrels (10^6 bbl), and millions of barrels of oil equivalent (10^6 boe):

Estimated by PEP as of January 1, 2022
Net Proved Reserves

	Gross Produced Natural Gas (10^9 ft3)	Oil (10^6 bbl)	Condensate (10^6 bbl)	Sales Gas (10^9 ft3)	Plant Liquid (10^6 bbl)	Dry Gas (10^9 ft3)	Dry Gas Equivalent to Liquid (10^6 bbl)	Oil Equivalent (10^6 bbl)
Proved								
Developed Producing	344.66	65.08	0.64	324.04	23.96	236.19	45.41	135.10
Developed non-Producing	136.70	26.35	0.15	111.28	7.01	87.91	16.90	50.41
Developed	481.36	91.43	0.79	435.32	30.97	324.10	62.32	185.51
Undeveloped	15.09	7.84	0.01	11.43	0.97	8.88	1.71	10.52
Total Proved	**496.45**	**99.27**	**0.80**	**446.75**	**31.94**	**332.98**	**64.02**	**196.03**

1. Reserves were estimated to the economic limit.
2. Dry gas equivalent to liquids was calculated based on dry gas volumes on a field-by-field basis using an energy equivalent factor reflecting the dry gas composition of each field, as provided by PEP.
3. Natural gas quantities estimated herein were converted to oil equivalent on a field-by-field basis using an energy equivalent factor reflecting the yields and shrinkages of each field, as provided by PEP.
4. BOE was estimated through the summation of volumes of Oil, Condensate, Plant Liquids and Dry Gas Equivalent to Liquid, as requested by PEP.

In comparing the detailed net proved reserves estimates prepared by Sproule and PEP, differences have been found, both positive and negative, resulting in an aggregate difference of 7.47 percent for proved reserves when compared on the basis of net oil equivalent barrels. It is Sproule's opinion that the net proved reserves estimates prepared by PEP on the properties evaluated and referred to above, when compared on the basis of net equivalent barrels, in aggregate, are reasonable.

While the oil and gas industry may be subject to regulatory changes from time to time that could affect an industry participant's ability to recover its reserves, we are not aware of any such governmental actions which would restrict the recovery of the January 1, 2022, estimated reserves.

Sproule possesses the technical skills and certifications required for this type of work. Sproule is a member in good standing of the Association of Professional Engineers and Geoscientists of Alberta ("APEGA"), an independent regulatory body that governs the practice of engineering and geoscience in the province of Alberta, Canada.

Sproule is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1951. Sproule does not have interest, direct or indirect, nor expects to receive any interest, direct or indirect, in the properties described in the report or in the securities of PEP. Our fees were not contingent on the results of our evaluation. This report has been prepared at the request of PEP. Sproule has used all assumptions, data, procedures, and methods that it considers necessary and appropriate to prepare this report.

Yours truly,

Sproule International Limited and Sproule Mexico S.A. de C.V.

/s/ Gary R. Finnis, P.Eng.

Gary R. Finnis, P.Eng.
Senior Manager, Reservoir Services

EXHIBIT 15.8
(Part 1 of 2)

Pemex Exploración y Producción

Estimated

Future Reserves

Attributable to Certain

Interests in the

Newly Incorporated Fields

SEC Parameters

As of

December 31, 2021

/s/ Guale Ramirez, P.E.

Guale Ramirez, P.E.
TBPELS License No.48318
President

RYDER SCOTT COMPANY, L.P.
TBPELS Firm Registration No. F-1580

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

EXHIBIT 15.8
(Part 1 of 2)

RYDER SCOTT COMPANY
PETROLEUM CONSULTANTS

TBPELS REGISTERED ENGINEERING FIRM F-1580
1100 LOUISIANA SUITE 4600 HOUSTON, TEXAS 77002-5294
FAX (713) 651-0849
TELEPHONE (713) 651-9191

April 22, 2022

Ing. Ángel Cid Munguía
Director General de Pemex Exploración y Producción.
Avenida Marina Nacional 329
Torre Ejecutiva, Piso 41
Col. Verónica Anzures, C.P. 11300
Del. Miguel Hidalgo, Ciudad de México

Dear Ing. Cid Munguía:

At the request of Pemex Exploración y Producción (PEP), a wholly owned subsidiary of Petróleos Mexicanos (Pemex), Ryder Scott Company, L.P. (Ryder Scott) has conducted a reserves audit of the estimates of the proved reserves owned by the United Mexican States as of December 31, 2021. The properties reviewed by us are operated by PEP. The estimates we audited were prepared by PEP's engineering and geological staff based on the definitions and disclosure guidelines of the United States Securities and Exchange Commission contained in Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009, in the Federal Register (SEC regulations). Our third party reserves audit, completed on April 1, 2022, and presented herein, was prepared for public disclosure by Pemex in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

The properties reviewed by Ryder Scott are located onshore and offshore in the areas known as the North, South, Marine Northeast and Marine Southwest regions of PEP. The fields included in this report are: Kuun and Tum in the North Region; Quesqui, Racemosa, Tupilco Profundo and Vinik from the South Region; Camatl, Copali, Itta, Paki, Tema, Tlakati, Tlamatini and Xolotl from the Southwest Marine Region and Kayab and Pit from the Northeast Marine Region.

The properties reviewed by Ryder Scott account for a portion of PEP's total net proved reserves as of December 31, 2021. Based on the estimates of total net proved reserves prepared by PEP, the reserves audit conducted by Ryder Scott addresses 3.2 percent of the total proved developed net liquid hydrocarbon reserves and 6.0 percent of the total proved developed net gas reserves or 4.0 percent of the total proved developed net reserves on a barrel of oil equivalent, BOE basis, and 24.9 percent of the total proved undeveloped net liquid hydrocarbon reserves and 24.7 percent of the total proved undeveloped net gas reserves or 25.7 percent of the total proved undeveloped net reserves on a barrel of oil equivalent, BOE basis, of PEP. On a total net reserves basis, the proved reserves audited by Ryder Scott represent 12.8 percent of Pemex´s total proved net reserves in the country on a barrel of oil equivalent, BOE basis.

As prescribed by the Society of Petroleum Engineers in Paragraph 2.2(f) of the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards), a reserves audit is defined as "the process of reviewing certain of the pertinent facts interpreted and assumptions made that have resulted in an estimate of reserves and/or Reserves Information prepared by others and the rendering of an opinion about (1) the appropriateness of the methodologies employed; (2) the adequacy and quality of the data relied upon; (3) the depth and thoroughness of the reserves estimation process; (4) the classification of reserves appropriate to the relevant definitions used; and (5) the reasonableness of the estimated reserve quantities and/or Reserves Information." Reserves Information may consist of various estimates pertaining to the extent and value of petroleum properties.

Based on our review, including the data, technical processes and interpretations presented by PEP, it is our opinion that the overall procedures and methodologies utilized by PEP in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by PEP are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards.

The estimated reserves presented in this report are related to hydrocarbon prices. PEP has informed us that in the preparation of their reserves and income projections, as of December 31, 2021, they used average prices during the 12-month period prior to the "as of date" of this report, determined as the unweighted arithmetic averages of the prices in effect on the first-day-of-the-month for each month within such period, unless prices were defined by contractual arrangements, as required by the SEC regulations. Actual future prices may vary considerably from the prices required by SEC regulations. The recoverable reserves volumes and the income attributable thereto have a direct relationship to the hydrocarbon prices actually received; therefore, volumes of reserves actually recovered may differ significantly from the estimated quantities presented in this report.

SEC PARAMETERS
Estimated Net Reserves
Attributable to Certain Interests of
Pemex Exploración y Producción
Newly Incorporated Fields
As of December 31, 2021

	Proved		
	Developed Producing	Undeveloped	Total Proved[5]
Net Reserves of Properties Audited by Ryder Scott			
Oil/Condensate – MM Barrels	109.5	568.9	678.4
Plant Products[1] – MM Barrels	24.0	72.0	96.0
Dry Gas[2] – MM Barrels Equiv.	44.3	135.5	179.8
BOE[3] – MM Barrels	177.8	776.4	954.2
Gross Gas[4] – Bcf	338.7	1,004.7	1,343.4

(1) Includes liquids generated through the transportation process and at the petrochemical plants.
(2) Dry Gas reserves are the dry, sweetened gas available for sale by Pemex Transformación Industrial at the tailgate of the processing plants.
(3) Barrels of oil-equivalent are based on dry gas conversion factors provided by PEP.
(4) Gross Gas represents produced volumes of gas before any losses for fuel use, venting, transporting or plant shrinkage.
(5) May not match the sum of the reserves sub-classes exactly due to rounding.

Liquid hydrocarbons are expressed in standard 42 U.S. gallon barrels and are shown in millions of barrels (MM Barrels). All gas volumes are reported on an "as-sold" basis expressed in billions of cubic feet (Bcf) at the official temperature and pressure bases of the areas in which the gas reserves are located. The net remaining reserves are also shown herein on an equivalent unit (BOE) basis wherein natural gas is converted to oil equivalent barrels using a specific factor for each field. MMBOE represents million barrels of oil equivalent.

Reserves Included in This Report

In our opinion, the proved reserves reviewed by us and presented in this report conform to the definition as set forth in the Securities and Exchange Commission's Regulations Part 210.4-10(a). An abridged version of the SEC reserves definitions from 210.4-10(a) entitled "Petroleum Reserves Definitions" is included as an attachment to this report.

The various proved reserves status categories are defined in the attachment to this report entitled "PETROLEUM RESERVES STATUS DEFINITIONS AND GUIDELINES" in this report.

Reserves are “estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations.” All reserves estimates involve an assessment of the uncertainty relating the likelihood that the actual remaining quantities recovered will be greater or less than the estimated quantities determined as of the date the estimate is made. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal categories, either proved or unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-categorized as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. At PEP’s request, this report addresses only the proved reserves attributable to the properties reviewed herein.

Proved oil and gas reserves are “those quantities of oil and gas which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible from a given date forward.” The proved reserves included herein were estimated using deterministic methods.
The SEC has defined reasonable certainty for proved reserves, when based on deterministic methods, as a “high degree of confidence that the quantities will be recovered.”

Proved reserves estimates will generally be revised only as additional geologic or engineering data become available or as economic conditions change. For proved reserves, the SEC states that “as changes due to increased availability of geoscience (geological, geophysical, and geochemical), engineering, and economic data are made to the estimated ultimate recovery (EUR) with time, reasonably certain EUR is much more likely to increase or remain constant than to decrease.” Moreover, estimates of proved reserves may be revised as a result of future operations, effects of regulation by governmental agencies or geopolitical or economic risks. Therefore, the proved reserves included in this report are estimates only and should not be construed as being exact quantities. They may or may not be actually recovered.

Audit Data, Methodology, Procedure and Assumptions

The estimation of reserves involves two distinct determinations. The first determination results in the estimation of the quantities of recoverable oil and gas and the second determination results in the estimation of the uncertainty associated with those estimated quantities in accordance with the definitions set forth by the Securities and Exchange Commission’s Regulations Part 210.4-10(a). The process of estimating the quantities of recoverable oil and gas reserves relies on the use of certain generally accepted analytical procedures. These analytical procedures fall into three broad categories or methods: (1) performance-based methods; (2) volumetric-based methods; and (3) analogy. These methods may be used individually or in combination by the reserves evaluator in the process of estimating the quantities

of reserves. Reserves evaluators must select the method or combination of methods that in their professional judgment is most appropriate given the nature and amount of reliable geoscience and engineering data available at the time of the estimate, the established or anticipated performance characteristics of the reservoir being evaluated and the stage of development or producing maturity of the property.

In many cases, the analysis of the available geoscience and engineering data and the subsequent interpretation of this data may indicate a range of possible outcomes in an estimate, irrespective of the method selected by the evaluator. When a range in the quantity of reserves is identified, the evaluator must determine the uncertainty associated with the incremental quantities of the reserves. If the reserve quantities are estimated using the deterministic incremental approach, the uncertainty for each discretes incremental quantity of the reserves is addressed by the reserves category assigned by the evaluator. Therefore, it is the categorization of reserves quantities as proved, probable and/or possible that addresses the inherent uncertainty in the estimated quantities reported. For proved reserves, uncertainty is defined by the SEC as reasonable certainty wherein the “quantities actually recovered are much more likely to be achieved than not.” The SEC states that “probable reserves are those additional reserves that are less certain to be recovered than proved reserves but which, together with proved reserves, are as likely as not to be recovered.” The SEC states that “possible reserves are those additional reserves that are less certain to be recovered than probable reserves and the total quantities ultimately recovered from a project have a low probability of exceeding proved plus probable plus possible reserves.” All quantities of reserves within the same reserves category must meet the SEC definitions as noted above.

Estimates of reserves quantities and their associated reserves categories may be revised in the future as additional geoscience or engineering data become available. Furthermore, estimates of reserves quantities and their associated reserves categories may also be revised due to other factors such as changes in economic conditions, results of future operations, effects of regulation by governmental agencies or geopolitical or economic risks as previously noted herein.

The proved reserves prepared by PEP for the properties that we reviewed were estimated by performance methods, the volumetric method, analogy, or a combination of methods. Approximately 90 percent of the proved producing reserves attributable to producing wells and/or reservoirs that we reviewed were estimated by performance methods. These performance methods include, but may not be limited to, decline curve analysis, numerical simulation and material balance, which utilized extrapolations of historical production and pressure data available through December 2021, in those cases where such data were considered to be definitive. The data utilized in these analyses were furnished to Ryder Scott by PEP and were considered sufficient for the purpose thereof. The remaining 10 percent of the proved producing reserves that we reviewed were estimated by the volumetric method, analogy, or a combination of methods. These methods were used where there were inadequate historical performance data to establish a definitive trend and where the use of production performance data as a basis for the reserve estimates was considered to be inappropriate.

All of the proved undeveloped reserves that we reviewed were estimated by the volumetric method, analogy, or a combination of methods. Volume versus depth analytical volumetric models that considered historical production volumes as well as movements of oil-water and gas-oil contacts with time were also utilized for certain major properties located onshore and offshore. The volumetric analysis utilized pertinent well and seismic data furnished to Ryder Scott by PEP for our review that were available through December 2021. The data utilized from the analogues in conjunction with well and seismic data incorporated into the volumetric analysis were considered sufficient for the purpose thereof.

To estimate economically recoverable proved oil and gas reserves many factors and assumptions are considered including, but not limited to, the use of reservoir parameters derived from geological, geophysical and engineering data which cannot be measured directly, economic criteria based on current costs and SEC pricing requirements, and forecasts of future production rates. Under the SEC regulations 210.4-10(a)(22)(v) and (26), proved reserves must be anticipated to be economically producible from a given date forward based on existing economic conditions including the prices and costs at which economic producibility from a reservoir is to be determined. While it may reasonably be anticipated that the future prices received for the sale of production and the operating costs and other costs relating to such production may increase or decrease from those under existing economic conditions, such changes were, in accordance with rules adopted by the SEC, omitted from consideration in conducting this review.

As stated previously, proved reserves must be anticipated to be economically producible from a given date forward based on existing economic conditions including the prices and costs at which economic producibility from a reservoir is to be determined. To confirm that the proved reserves reviewed by us meet the SEC requirements to be economically producible, we have reviewed certain primary economic data utilized by PEP relating to hydrocarbon prices and costs as noted herein.

The hydrocarbon prices furnished by PEP for the properties reviewed by us are based on SEC price parameters using the average prices during the 12-month period prior to the “as of date” of this report, determined as the unweighted arithmetic averages of the prices in effect on the first-day-of-the-month for each month within such period, unless prices were defined by contractual arrangements. For hydrocarbon products sold under contract, the contract prices, including fixed and determinable escalations exclusive of inflation adjustments, were used until expiration of the contract. Upon contract expiration, the prices were adjusted to the 12-month unweighted arithmetic average as previously described.

The initial SEC hydrocarbon prices in effect on December 31, 2021 for the properties reviewed by us were determined using the 12-month average first-day-of-the-month prices appropriate to the geographic areas where the hydrocarbons are sold. These prices are the actual prices received by PEP for the sale of hydrocarbon products.

The table below summarizes PEP's net volume weighted prices adjusted for differentials for the properties reviewed by us by geographic areas and referred to herein as PEP's "average realized prices." The average realized prices shown in the table below were determined from PEP's estimate of the total future gross revenue before production taxes for the properties reviewed by us and PEP's estimate of the total net reserves for the properties reviewed by us for each of the areas referred to as Region as listed below. The data shown in the table below is presented in accordance with SEC disclosure requirements for each of the geographic areas shown and reviewed by us.

Geographic Area (Region)	Product	Average Realized Prices
North Region	Oil/Condensate	$ 66.57/bbl
	Gas	$ 4.68/Mcf
South Region	Oil/Condensate	$ 69.98/bbl
	Gas	$ 6.28Mcf
Northeast Marine Region	Oil/Condensate	$ 53.40/bbl
	Gas	$ 3.95/Mcf
Southwest Marine Region	Oil/Condensate	$ 65.74/bbl
	Gas	$ 6.70/Mcf

The effects of derivative instruments designated as price hedges of oil and gas quantities are not reflected in PEP's individual property evaluations.

Accumulated gas production imbalances, if any, were not taken into account in the proved gas reserves estimates reviewed. The proved gas volumes included herein do not include volumes of gas consumed in operations as reserves.

Operating costs furnished by PEP are based on the operating expense reports of PEP and include only those costs directly applicable to the fields or wells for the properties reviewed by us. The operating costs include a portion of general and administrative costs allocated directly to the fields and wells. The operating costs furnished by PEP were accepted as factual data and reviewed by us for their reasonableness; however, we have not conducted an independent verification of the data used by PEP. No deduction was made for loan repayments, interest expenses, or exploration and development prepayments that were not charged directly to the fields, wells or contract areas.

Development costs furnished by PEP are based on authorizations for expenditure for the proposed work or actual costs for similar projects. The development costs furnished by PEP were accepted as factual data and reviewed by us for their reasonableness; however, we have not conducted an independent verification of the data used by PEP. The estimated net cost of abandonment after salvage was included by Pemex for properties where abandonment costs net of salvage were material. Pemex's estimates of the net abandonment costs were accepted without independent verification.

The proved undeveloped reserves for the properties reviewed by us have been incorporated herein in accordance with PEP's plans to develop these reserves as of December 31, 2021. The implementation of these development plans as presented to us is subject to the approval process adopted by PEP's management. As the result of our inquiries during the course of our review, PEP has informed us that the development activities for the properties reviewed by us have been subjected to and received the internal approvals required by PEP's management at the appropriate local, regional and/or corporate level. PEP has provided written documentation supporting their commitment to proceed with the development activities as presented to us. Additionally, PEP has informed us that they are not aware of any legal, regulatory or political obstacles that would significantly alter their plans. While these plans could change from those under existing economic conditions as of December 31, 2021, such changes were, in accordance with rules adopted by the SEC, omitted from consideration in making this evaluation.

Current costs used by PEP were held constant throughout the life of the properties.

PEP's forecasts of future production rates are based on historical performance from wells currently on production. If no production decline trend has been established, future production rates were held constant until a decline in ability to produce was anticipated. An estimated rate of decline was then applied until depletion of the reserves. If a decline trend has been established, this trend was used as the basis for estimating future production rates.

Test data and other related information were used by PEP to estimate the anticipated initial production rates for those wells or locations that are not currently producing. For reserves not yet on production, sales were estimated to commence at an anticipated date furnished by PEP. Wells or locations that are not currently producing may start producing earlier or later than anticipated in PEP's estimates due to unforeseen factors causing a change in the timing to initiate production. Such factors may include delays due to weather, the availability of rigs, the sequence of drilling, completing and/or recompleting wells and/or constraints set by regulatory bodies.

The future production rates from wells currently on production or wells or locations that are not currently producing may be more or less than estimated because of changes including, but not limited to, reservoir performance, operating conditions related to surface facilities, compression and artificial lift, pipeline capacity and/or operating conditions, producing market demand and/or allowables or other constraints set by regulatory bodies.

Ryder Scott did not evaluate the country and geopolitical risks in the country of Mexico where all of the subject properties are located. PEP's operations may be subject to various levels of governmental controls and regulations. These controls and regulations may include, but may not be limited to, matters relating to land tenure and use, drilling and production practices, environmental protection, marketing and pricing policies, various taxes and levies and are subject to change from time to time. Such changes in governmental regulations and policies may cause volumes of proved reserves actually recovered and amounts of proved income actually received to differ significantly from the estimated quantities.

The estimates of proved reserves presented herein were based upon a review of the subject properties; however, we have not made any field examination of the properties. No consideration was given in this report to potential environmental liabilities that may exist nor were any costs included by PEP for potential liabilities to restore and clean up damages, if any, caused by past operating practices.

Certain technical personnel of PEP are responsible for the preparation of reserves estimates on new properties and for the preparation of revised estimates, when necessary, on old properties. These personnel assembled the necessary data and maintained the data and workpapers in an orderly manner. We consulted with these technical personnel and had access to their workpapers and supporting data in the course of our audit.

PEP has informed us that they have furnished us all of the material accounts, records, geological and engineering data, and reports and other data required for this investigation. In performing our audit of PEP's forecast of future proved production, we have relied upon data furnished by PEP with respect to property interests, production and well tests from examined wells, normal direct costs of operating the properties, other costs such as transportation and/or processing fees, recompletion and development costs, development plans, abandonment costs after salvage, product prices based on the SEC regulations, adjustments or differentials to product prices, geological structural and isochore maps, well logs, core analyses, and pressure measurements. Ryder Scott reviewed such factual data for its reasonableness; however, we have not conducted an independent verification of the data furnished by PEP. The data described herein were accepted as authentic and sufficient for determining the reserves unless, during the course of our examination, a matter of question came to our attention in which case the data were not accepted until all questions were satisfactorily resolved. We consider the factual data furnished to us by PEP to be appropriate and sufficient for the purpose of our review of PEP's estimates of reserves. In summary, we consider the assumptions, data, methods and analytical procedures used by PEP and as reviewed by us appropriate for the purpose hereof, and we have used all such methods and procedures that we consider necessary and appropriate under the circumstances to render the conclusions set forth herein.

Audit Opinion

Based on our review, including the data, technical processes and interpretations presented by PEP, it is our opinion that the overall procedures and methodologies utilized by PEP in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations and that the overall proved reserves in terms of barrels of oil equivalent (BOE) for the reviewed properties as estimated by PEP are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent as set forth in the SPE auditing standards. Ryder Scott found the processes and controls
used by PEP in their estimation of proved reserves to be effective and, in the aggregate, we found no bias in the utilization and analysis of data in estimates for these properties.

We were in reasonable agreement with PEP's estimates of proved reserves for the properties which we reviewed; although in certain cases there was more than an acceptable variance between PEP's estimates and our estimates due to a difference in interpretation of data. However notwithstanding, it is our opinion that on an aggregate basis the data presented herein for the properties that we reviewed fairly reflects the estimated net reserves owned by the United Mexican States.

Standards of Independence and Professional Qualification

Ryder Scott is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1937. Ryder Scott is employee-owned and maintains offices in Houston, Texas; Denver, Colorado; and Calgary, Alberta, Canada. We have over eighty engineers and geoscientists on our permanent staff. By virtue of the size of our firm and the large number of clients for which we provide services, no single client or job represents a material portion of our annual revenue. We do not serve as officers or directors of any privately-owned or publicly-traded oil and gas company and are separate and independent from the operating and investment decision-making process of our clients. This allows us to bring the highest level of independence and objectivity to each engagement for our services.

Ryder Scott actively participates in industry-related professional societies and organizes an annual public forum focused on the subject of reserves evaluations and SEC regulations. Many of our staff have authored or co-authored technical papers on the subject of reserves related topics. We encourage our staff to maintain and enhance their professional skills by actively participating in ongoing continuing education.

Prior to becoming an officer of the Company, Ryder Scott requires that staff engineers and geoscientists have received professional accreditation in the form of a registered or certified professional engineer's license or a registered or certified professional geoscientist's license, or the equivalent thereof, from an appropriate governmental authority or a recognized self-regulating professional organization. Regulating agencies require that, in order to maintain active status, a certain amount of continuing education hours be completed annually, including an hour of ethics training. Ryder Scott fully supports this technical and ethics training with our internal requirement mentioned above.

We are independent petroleum engineers with respect to PEP. Neither we nor any of our employees have any financial interest in the subject properties, and neither the employment to do this work nor the compensation is contingent on our estimates of reserves for the properties which were reviewed.

The results of this audit, presented herein, are based on technical analysis conducted by teams of geoscientists and engineers from Ryder Scott. The professional qualifications of the undersigned, the technical person primarily responsible for overseeing the review of the reserves information discussed in this report, are included as an attachment to this letter.

Terms of Usage

The results of our third party audit, presented in report form herein, were prepared in accordance with the disclosure requirements set forth in the SEC regulations and intended for public disclosure as an exhibit in filings made with the SEC by Pemex.

Pemex makes periodic filings on Form 20-F with the SEC under the 1934 Exchange Act. Furthermore, Pemex files registration statements with the SEC under the 1933 Securities Act into which filings on Form 20-F are incorporated by reference. We have consented to the references to our name in and the filing of this report as an exhibit to the annual report on Form 20-F of Pemex for the year ended December 31, 2021. Our written consent for such use will be included as a separate exhibit to such Form
20-F. In the event the references to our name as well as references to our report are incorporated by reference into any registration statement on Form F-4, then our written consent for such use will be included as a separate exhibit to such registration statement.

We have provided PEP with a digital version of the original signed copy of this report letter. In the event there are any differences between the digital version included in filings made by PEP and the original signed report letter, the original signed report letter shall control and supersede the digital version.

The data and workpapers used in the preparation of this report are available for examination by authorized parties in our offices. Please contact us if we can be of further service.

Very truly yours,

RYDER SCOTT COMPANY, L.P.
TBPELS Firm Registration No. F-1580

/s/ Guale Ramirez, P.E.

Guale Ramirez, P.E.
TBPELS License No. 48318
President

GR (DCR)/pl

Professional Qualifications of Primary Technical Person

The conclusions presented in this report are the result of technical analysis conducted by teams of geoscientists and engineers from Ryder Scott Company, L.P. Guale Ramirez was the primary technical person responsible for overseeing the estimate of the reserves, future production and income.

Mr. Ramirez, an employee of Ryder Scott Company, L.P. (Ryder Scott) since 1981, is the President and also serves as a member of the Board of Directors. He is responsible for executive management and supervising staff and client relations of the company. Before joining Ryder Scott, Mr. Ramirez served in a number of engineering positions with Sun Oil Company and Natomas North America. For more information regarding Mr. Ramirez's geographic and job specific experience, please refer to the Ryder
Scott Company website at www.ryderscott.com/Employees.

Mr. Ramirez earned a Bachelor of Science Degree in Mechanical Engineering with honors from Texas A&M University in 1976 and is a licensed Professional Engineer in the State of Texas. He is also a member of the Society of Petroleum Engineers and Society of Petroleum Evaluation Engineers.

In addition to gaining experience and competency through prior work experience, the Texas Board of Professional Engineers requires a minimum of fifteen hours of continuing education annually, including at least one hour in the area of professional ethics, which Mr. Ramirez fulfills. As part of his 2021 continuing education hours, Mr. Ramirez attended and internally received 18 hours of formalized training as well as a one day public forum, the 2021 RSC Reserves Conference relating to the definitions and disclosure guidelines contained in the United States Securities and Exchange Commission Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009 in the Federal Register. Mr. Ramirez has also presented courses on the SEC and SPE-PRMS reserves definitions on various occasions during 2011, 2012, 2013, 2015, 2017, 2018 2020 and 2021.

Based on his educational background, professional training and more than 38 years of practical experience in the estimation and evaluation of petroleum reserves, Mr. Ramirez has attained the professional qualifications as a Reserves Evaluator and Reserves Auditor set forth in Article III of the "Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information" promulgated by the Society of Petroleum Engineers as of June 2019.

PETROLEUM RESERVES DEFINITIONS

As Adapted From:
RULE 4-10(a) of REGULATION S-X PART 210
UNITED STATES SECURITIES AND EXCHANGE COMMISSION (SEC)

PREAMBLE

On January 14, 2009, the United States Securities and Exchange Commission (SEC) published the "Modernization of Oil and Gas Reporting; Final Rule" in the Federal Register of National Archives and Records Administration (NARA). The "Modernization of Oil and Gas Reporting; Final Rule" includes revisions and additions to the definition section in Rule 4-10 of Regulation S-X, revisions and additions to the oil and gas reporting requirements in Regulation S-K, and amends and codifies Industry Guide 2 in Regulation S-K. The "Modernization of Oil and Gas Reporting; Final Rule", including all references to Regulation S-X and Regulation S-K, shall be referred to herein collectively as the "SEC regulations". The SEC regulations take effect for all filings made with the United States Securities and Exchange Commission as of December 31, 2009, or after January 1, 2010. Reference should be made to the full text under Title 17, Code of Federal Regulations, Regulation S-X Part 210, Rule 4-10(a) for the complete definitions (direct passages excerpted in part or wholly from the aforementioned SEC document are denoted in italics herein).

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. All reserve estimates involve an assessment of the uncertainty relating the likelihood that the actual remaining quantities recovered will be greater or less than the estimated quantities determined as of the date the estimate is made. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal classifications, either proved or unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-classified as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. Under the SEC regulations as of December 31, 2009, or after January 1, 2010, a company may optionally disclose estimated quantities of probable or possible oil and gas reserves in documents publicly filed with the SEC. The SEC regulations continue to prohibit disclosure of estimates of oil and gas resources other than reserves and any estimated values of such resources in any document publicly filed with the SEC unless such information is required to be disclosed in the document by foreign or state law as noted in §229.1202 Instruction to Item 1202.

Reserves estimates will generally be revised only as additional geologic or engineering data become available or as economic conditions change.

Reserves may be attributed to either natural energy or improved recovery methods. Improved recovery methods include all methods for supplementing natural energy or altering natural forces in the reservoir to increase ultimate recovery. Examples of such methods are pressure maintenance, natural gas cycling, waterflooding, thermal methods, chemical flooding, and the use of miscible and immiscible displacement fluids. Other improved recovery methods may be developed in the future as petroleum technology continues to evolve.

Reserves may be attributed to either conventional or unconventional petroleum accumulations. Petroleum accumulations are considered as either conventional or unconventional based on the nature of their in-place characteristics, extraction method applied, or degree of processing prior to sale.
Examples of unconventional petroleum accumulations include coalbed or coalseam methane (CBM/CSM), basin-centered gas, shale gas, gas hydrates, natural bitumen and oil shale deposits. These unconventional accumulations may require specialized extraction technology and/or significant processing prior to sale.

Reserves do not include quantities of petroleum being held in inventory.

Because of the differences in uncertainty, caution should be exercised when aggregating quantities of petroleum from different reserves categories.

RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(26) defines reserves as follows:

Reserves. *Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce or a revenue interest in the production, installed means of delivering oil and gas or related substances to market, and all permits and financing required to implement the project.*

Note to paragraph (a)(26): Reserves should not be assigned to adjacent reservoirs isolated by major, potentially sealing, faults until those reservoirs are penetrated and evaluated as economically producible. Reserves should not be assigned to areas that are clearly separated from a known accumulation by a non-productive reservoir (i.e., absence of reservoir, structurally low reservoir, or negative test results). Such areas may contain prospective resources (i.e., potentially recoverable resources from undiscovered accumulations).

PROVED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(22) defines proved oil and gas reserves as follows:

Proved oil and gas reserves. *Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.*

(i) The area of the reservoir considered as proved includes:

(A) The area identified by drilling and limited by fluid contacts, if any, and

(B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.

PROVED RESERVES (SEC DEFINITIONS) CONTINUED

(ii) In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.

(iii) Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.

(iv) Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:

(A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and

(B) The project has been approved for development by all necessary parties and entities, including governmental entities.

(v) Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

PETROLEUM RESERVES STATUS DEFINITIONS AND GUIDELINES

As Adapted From:
RULE 4-10(a) of REGULATION S-X PART 210
UNITED STATES SECURITIES AND EXCHANGE COMMISSION (SEC)

and

2018 PETROLEUM RESOURCES MANAGEMENT SYSTEM (SPE-PRMS)
Sponsored and Approved by:
SOCIETY OF PETROLEUM ENGINEERS (SPE)
WORLD PETROLEUM COUNCIL (WPC)
AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (AAPG)
SOCIETY OF PETROLEUM EVALUATION ENGINEERS (SPEE)
SOCIETY OF EXPLORATION GEOPHYSICISTS (SEG)
SOCIETY OF PETROPHYSICISTS AND WELL LOG ANALYSTS (SPWLA)
EUROPEAN ASSOCIATION OF GEOSCIENTISTS & ENGINEERS (EAGE)

Reserves status categories define the development and producing status of wells and reservoirs. Reference should be made to Title 17, Code of Federal Regulations, Regulation S-X Part 210, Rule 4-10(a) and the SPE-PRMS as the following reserves status definitions are based on excerpts from the original documents (direct passages excerpted from the aforementioned SEC and SPE-PRMS documents are denoted in italics herein).

DEVELOPED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(6) defines developed oil and gas reserves as follows:

Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

> *(i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and*
>
> *(ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.*

Developed Producing (SPE-PRMS Definitions)

While not a requirement for disclosure under the SEC regulations, developed oil and gas reserves may be further sub-classified according to the guidance contained in the SPE-PRMS as Producing or Non-Producing.

Developed Producing Reserves

Developed Producing Reserves are expected quantities to be recovered from completion intervals that are open and producing at the effective date of the estimate. Improved recovery reserves are considered producing only after the improved recovery project is in operation.

Developed Non-Producing

Developed Non-Producing Reserves include shut-in and behind-pipe Reserves.

Shut-In

Shut-in Reserves are expected to be recovered from:

(1) completion intervals that are open at the time of the estimate but which have not yet started producing;

(2) wells which were shut-in for market conditions or pipeline connections; or

(3) wells not capable of production for mechanical reasons.

Behind-Pipe

Behind-pipe Reserves are expected to be recovered from zones in existing wells that will require additional completion work or future re-completion before start of production with minor cost to access these reserves.

In all cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.

UNDEVELOPED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(31) defines undeveloped oil and gas reserves as follows:

Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

(i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.

(ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstances, justify a longer time.

(iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir, as defined in paragraph (a)(2) of this section, or by other evidence using reliable technology establishing reasonable certainty.

EXHIBIT 15.8
(Part 2 of 2)

Pemex Exploración y Producción

Estimated

Future Reserves

Attributable to Certain

Interests in the Reynosa and Veracruz Assets

SEC Parameters

As of

December 31, 2021

/s/ Guale Ramirez, P.E.

Guale Ramirez, P.E.
TBPELS License No.48318
President

RYDER SCOTT COMPANY, L.P.
TBPELS Firm Registration No. F-1580

EXHIBIT 15.8
(Part 2 of 2)

RYDER SCOTT COMPANY
PETROLEUM CONSULTANTS
TBPELS REGISTERED ENGINEERING FIRM F-1580
1100 LOUISIANA SUITE 4600 HOUSTON, TEXAS 77002 -5294 TELEPHONE (713) 651-9191
FAX (713) 651-0849

April 22, 2022

Ing. Ángel Cid Munguía
Director General de Pemex Exploración y Producción.
Avenida Marina Nacional 329
Torre Ejecutiva, Piso 41
Col. Verónica Anzures, C.P. 11300
Del. Miguel Hidalgo, Ciudad de México

Dear Ing. Cid Munguía:

At the request of Pemex Exploración y Producción (PEP), a wholly owned subsidiary of Petróleos Mexicanos (Pemex), Ryder Scott Company, L.P. (Ryder Scott) has conducted a reserves audit of the estimates of the proved reserves owned by the United Mexican States as of December 31, 2021. The estimates we audited were prepared by PEP's engineering and geological staff based on the definitions and disclosure guidelines of the United States Securities and Exchange Commission contained in Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009, in the Federal Register (SEC regulations). Our third party reserves audit, completed on March 31, 2022, and presented herein, was prepared for public disclosure by Pemex in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

The properties reviewed by Ryder Scott are located onshore in the PEP assets known as Reynosa and Veracruz in the states of Coahuila, Nuevo Leon, San Luis Potosi, Tamaulipas and Veracruz, Mexico.

At PEP's request, the Ixachi Field is not included in the results of the Reynosa and Veracruz assets.

The properties reviewed by Ryder Scott account for a portion of PEP's total net proved reserves as of December 31, 2021. Based on the estimates of total net proved reserves prepared by PEP, the reserves audit conducted by Ryder Scott addresses 0.8 percent of the total proved developed net liquid hydrocarbon reserves and 10.9 percent of the total proved developed net gas reserves or 2.8 percent of the total proved developed net reserves on a barrel of oil equivalent, BOE basis, and 0.4 percent of the total proved undeveloped net liquid hydrocarbon reserves and 4.7 percent of the total proved undeveloped net gas reserves or 1.4 percent of the total proved undeveloped net reserves on a barrel of oil equivalent, BOE basis, of PEP. On a total net reserves basis, the proved reserves audited by Ryder Scott represent 2.2 percent of Pemex´s total proved net reserves in the country on a barrel of oil equivalent, BOE basis.

As prescribed by the Society of Petroleum Engineers in Paragraph 2.2(f) of the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (SPE auditing standards), a reserves audit is defined as "the process of reviewing certain of the pertinent facts interpreted and assumptions made that have resulted in an estimate of reserves and/or Reserves Information prepared by others and the rendering of an opinion about (1) the appropriateness of the methodologies employed; (2) the adequacy and quality of the data relied upon; (3) the depth and thoroughness of the reserves estimation process; (4) the classification of reserves appropriate to the relevant definitions used; and (5) the reasonableness of the estimated reserve quantities and/or Reserves Information." Reserves Information may consist of various estimates pertaining to the extent and value of petroleum properties.

Based on our review, including the data, technical processes and interpretations presented by PEP, it is our opinion that the overall procedures and methodologies utilized by PEP in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations, and that the overall proved reserves for the reviewed properties as estimated by PEP are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent set forth in the SPE auditing standards.

The estimated reserves presented in this report are related to hydrocarbon prices. PEP has informed us that in the preparation of their reserves and income projections, as of December 31, 2021, they used average prices during the 12-month period prior to the "as of date" of this report, determined as the unweighted arithmetic averages of the prices in effect on the first-day-of-the-month for each month within such period, unless prices were defined by contractual arrangements, as required by the SEC regulations. Actual future prices may vary considerably from the prices required by SEC regulations. The recoverable reserves volumes and the income attributable thereto have a direct relationship to the hydrocarbon prices actually received; therefore, volumes of reserves actually recovered may differ significantly from the estimated quantities presented in this report.

SEC PARAMETERS
Estimated Net Reserves
Attributable to Certain Interests of
Pemex Exploración y Producción
Reynosa and Veracruz Assets(1)
As of December 31, 2021

	Proved			
	Developed			
	Producing	Non-Producing	Undeveloped	Total Proved[6]
Net Reserves of Properties				
Audited by Ryder Scott				
Oil/Condensate – MM Barrels	24.5	2.3	10.0	36.8
Plant Products[2] – MM Barrels	6.5	0.8	2.3	9.6
Dry Gas[3] – MM Barrels Equivalent	73.3	13.5	27.8	114.6
BOE[4] – MM Barrels	107.3	17.2	42.0	166.4
Gross Gas[5] – Bcf	532.3	87.7	192.4	812.4

(1) Does not include the Ixachi Field
(2) Includes liquids generated through the transportation process and at the petrochemical plants.
(3) Dry Gas reserves are the dry, sweetened gas available for sale by Pemex Transformación Industrial at the tailgate of the processing plants.
(4) Barrels of oil-equivalent are based on dry gas conversion factors provided by PEP.
(5) Gross Gas represents produced volumes of gas before any losses for fuel use, venting, transporting or plant shrinkage.
(6) May not match the sum of the reserves sub-classes exactly due to rounding.

Liquid hydrocarbons are expressed in standard 42 U.S. gallon barrels and are shown in millions of barrels (MM Barrels). All gas volumes are reported on an "as-sold" basis expressed in billions of cubic feet (Bcf) at the official temperature and pressure bases of the areas in which the gas reserves are located. The net remaining reserves are also shown herein on an equivalent unit (BOE) basis wherein natural gas is converted to oil equivalent barrels using a specific factor for each field. MMBOE represents million barrels of oil equivalent.

Reserves Included in This Report

In our opinion, the proved reserves reviewed by us and presented in this report conform to the definition as set forth in the Securities and Exchange Commission's Regulations Part 210.4-10(a). An abridged version of the SEC reserves definitions from 210.4-10(a) entitled "Petroleum Reserves Definitions" is included as an attachment to this report.

The various proved reserves status categories are defined in the attachment to this report entitled "PETROLEUM RESERVES STATUS DEFINITIONS AND GUIDELINES" in this report.

Reserves are "estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations." All reserves estimates involve an assessment of the uncertainty relating the likelihood that the actual remaining quantities recovered will be greater or less than the estimated quantities determined as of the date the estimate is made. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal categories, either proved or unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-categorized as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. At PEP's request, this report addresses only the proved reserves attributable to the properties reviewed herein.

Proved oil and gas reserves are "those quantities of oil and gas which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible from a given date forward." The proved reserves included herein were estimated using deterministic methods.

The SEC has defined reasonable certainty for proved reserves, when based on deterministic methods, as a "high degree of confidence that the quantities will be recovered."

Proved reserves estimates will generally be revised only as additional geologic or engineering data become available or as economic conditions change. For proved reserves, the SEC states that "as changes due to increased availability of geoscience (geological, geophysical, and geochemical), engineering, and economic data are made to the estimated ultimate recovery (EUR) with time, reasonably certain EUR is much more likely to increase or remain constant than to decrease." Moreover, estimates of proved reserves may be revised as a result of future operations, effects of regulation by governmental agencies or geopolitical or economic risks. Therefore, the proved reserves included in this report are estimates only and should not be construed as being exact quantities. They may or may not be actually recovered.

Audit Data, Methodology, Procedure and Assumptions

The estimation of reserves involves two distinct determinations. The first determination results in the estimation of the quantities of recoverable oil and gas and the second determination results in the estimation of the uncertainty associated with those estimated quantities in accordance with the definitions set forth by the Securities and Exchange Commission's Regulations Part 210.4-10(a). The process of estimating the quantities of recoverable oil and gas reserves relies on the use of certain generally accepted analytical procedures. These analytical procedures fall into three broad categories or methods: (1) performance-based methods; (2) volumetric-based methods; and (3) analogy. These methods may be used individually or in combination by the reserves evaluator in the process of estimating the quantities of reserves. Reserves evaluators must select the method or combination of methods that in their professional judgment is most appropriate given the nature and amount of reliable geoscience and engineering data available at the time of the estimate, the established or anticipated performance characteristics of the reservoir being evaluated and the stage of development or producing maturity of the property.

In many cases, the analysis of the available geoscience and engineering data and the subsequent interpretation of this data may indicate a range of possible outcomes in an estimate, irrespective of the method selected by the evaluator. When a range in the quantity of reserves is identified, the evaluator must determine the uncertainty associated with the incremental quantities of the reserves. If the reserve quantities are estimated using the deterministic incremental approach, the uncertainty for each discretes incremental quantity of the reserves is addressed by the reserves category assigned by the evaluator. Therefore, it is the categorization of reserves quantities as proved, probable and/or possible that addresses the inherent uncertainty in the estimated quantities reported. For proved reserves, uncertainty is defined by the SEC as reasonable certainty wherein the "quantities actually recovered are much more likely to be achieved than not." The SEC states that "probable reserves are those additional reserves that are less certain to be recovered than

proved reserves but which, together with proved reserves, are as likely as not to be recovered." The SEC states that "possible reserves are those additional reserves that are less certain to be recovered than probable reserves and the total quantities ultimately recovered from a project have a low probability of exceeding proved plus probable plus possible reserves." All quantities of reserves within the same reserves category must meet the SEC definitions as noted above.

Estimates of reserves quantities and their associated reserves categories may be revised in the future as additional geoscience or engineering data become available. Furthermore, estimates of reserves quantities and their associated reserves categories may also be revised due to other factors such as changes in economic conditions, results of future operations, effects of regulation by governmental agencies or geopolitical or economic risks as previously noted herein.

The proved reserves prepared by PEP for the properties that we reviewed were estimated by performance methods, the volumetric method, analogy, or a combination of methods. Approximately 81 percent of the proved producing reserves attributable to producing wells and/or reservoirs that we reviewed were estimated by performance methods. These performance methods include, but may not be limited to, decline curve analysis and material balance, which utilized extrapolations of historical production and pressure data available through December 2021, in those cases where such data were considered to be definitive. The data utilized in these analyses were furnished to Ryder Scott by PEP and were considered sufficient for the purpose thereof. The remaining 19 percent of the proved producing reserves that we reviewed were estimated by the volumetric method, analogy, or a combination of methods. These methods were used where there were inadequate historical performance data to establish a definitive trend and where the use of production performance data as a basis for the reserve estimates was considered to be inappropriate.

All of the proved non-producing and undeveloped reserves that we reviewed were estimated by the volumetric method, analogy, or a combination of methods. The volumetric analysis utilized pertinent well and seismic data furnished to Ryder Scott by PEP for our review that were available through December 2021. The data utilized from the analogues in conjunction with well and seismic data incorporated into the volumetric analysis were considered sufficient for the purpose thereof.

To estimate economically recoverable proved oil and gas reserves many factors and assumptions are considered including, but not limited to, the use of reservoir parameters derived from geological, geophysical and engineering data which cannot be measured directly, economic criteria based on current costs and SEC pricing requirements, and forecasts of future production rates. Under the SEC regulations 210.4-10(a)(22)(v) and (26), proved reserves must be anticipated to be economically producible from a given date forward based on existing economic conditions including the prices and costs at which economic producibility from a reservoir is to be determined. While it may reasonably be anticipated that the future prices received for the sale of production and the operating costs and other costs relating to such production may increase or decrease from those under existing economic conditions, such changes were, in accordance with rules adopted by the SEC, omitted from consideration in conducting this review.

As stated previously, proved reserves must be anticipated to be economically producible from a given date forward based on existing economic conditions including the prices and costs at which economic producibility from a reservoir is to be determined. To confirm that the proved reserves reviewed by us meet the SEC requirements to be economically producible, we have reviewed certain primary economic data utilized by PEP relating to hydrocarbon prices and costs as noted herein.

The hydrocarbon prices furnished by PEP for the properties reviewed by us are based on SEC price parameters using the average prices during the 12-month period prior to the "as of date" of this report, determined as the unweighted arithmetic averages of the prices in effect on the first-day-of-the-month for each month within such period, unless prices were defined by contractual arrangements. For hydrocarbon products sold under contract, the contract prices, including fixed and determinable escalations exclusive of inflation adjustments, were used until expiration of the contract. Upon contract expiration, the prices were adjusted to the 12-month unweighted arithmetic average as previously described.

The initial SEC hydrocarbon prices in effect on December 31, 2021 for the properties reviewed by us were determined using the 12-month average first-day-of-the-month prices appropriate to the geographic areas where the hydrocarbons are sold. These prices are the actual prices received by PEP for the sale of hydrocarbon products.

The table below summarizes PEP's net volume weighted prices adjusted for differentials for the properties reviewed by us by geographic areas and referred to herein as PEP's "average realized prices." The average realized prices shown in the table below were determined from PEP's estimate of the total future gross revenue before production taxes for the properties reviewed by us and PEP's estimate of the total net reserves for the properties reviewed by us for each of the areas in the Reynosa and Veracruz Activos as listed below. The data shown in the table below is presented in accordance with SEC disclosure requirements for each of the geographic areas shown and reviewed by us.

Geographic Area (Activo)	Product	Average Realized Prices
Reynosa	Oil/Condensate	$61.21/Bbl
	Gas	$4.36/MCF
Veracruz	Oil/Condensate	$ 69.41/Bbl
	Gas	$4.53/MCF

The effects of derivative instruments designated as price hedges of oil and gas quantities are not reflected in PEP's individual property evaluations.

Accumulated gas production imbalances, if any, were not taken into account in the proved gas reserves estimates reviewed. The proved gas volumes included herein do not include volumes of gas consumed in operations as reserves.

Operating costs furnished by PEP are based on the operating expense reports of PEP and include only those costs directly applicable to the fields or wells for the properties reviewed by us. The operating costs include a portion of general and administrative costs allocated directly to the fields and wells. The operating costs furnished by PEP were accepted as factual data and reviewed by us for their reasonableness; however, we have not conducted an independent verification of the data used by PEP. No deduction was made for loan repayments, interest expenses, or exploration and development prepayments that were not charged directly to the fields, wells or contract areas.

Development costs furnished by PEP are based on authorizations for expenditure for the proposed work or actual costs for similar projects. The development costs furnished by PEP were accepted as factual data and reviewed by us for their reasonableness; however, we have not conducted an independent verification of the data used by PEP. The estimated net cost of abandonment after salvage was included by Pemex for properties where abandonment costs net of salvage were material. Pemex's estimates of the net abandonment costs were accepted without independent verification.

The proved undeveloped reserves for the properties reviewed by us have been incorporated herein in accordance with PEP's plans to develop these reserves as of December 31, 2021. The implementation of these development plans as presented to us is subject to the approval process adopted by PEP's management. As the result of our inquiries during the course of our review, PEP has informed us that the development activities for the properties reviewed by us have been subjected to and received the internal approvals required by PEP's management at the appropriate local, regional and/or corporate level. Additionally, PEP has informed us that they are not aware of any legal, regulatory or political obstacles that would significantly alter their plans. While these plans could change from those under existing economic conditions as of December 31, 2021, such changes were, in accordance with rules adopted by the SEC, omitted from consideration in making this evaluation.

Current costs used by PEP were held constant throughout the life of the properties.

PEP's forecasts of future production rates are based on historical performance from wells currently on production. If no production decline trend has been established, future production rates were held constant until a decline in ability to produce was anticipated. An estimated rate of decline was then applied until depletion of the reserves. If a decline trend has been established, this trend was used as the basis for estimating future production rates.

Test data and other related information were used by PEP to estimate the anticipated initial production rates for those wells or locations that are not currently producing. For reserves not yet on production, sales were estimated to commence at an anticipated date furnished by PEP. Wells or locations that are not currently producing may start producing earlier or later than anticipated in PEP's estimates due to unforeseen factors causing a change in the timing to initiate production. Such factors may include delays due to weather, the availability of rigs, the sequence of drilling, completing and/or recompleting wells and/or constraints set by regulatory bodies.

The future production rates from wells currently on production or wells or locations that are not currently producing may be more or less than estimated because of changes including, but not limited to, reservoir performance, operating conditions related to surface facilities, compression and artificial lift, pipeline capacity and/or operating conditions, producing market demand and/or allowables or other constraints set by regulatory bodies.

Ryder Scott did not evaluate the country and geopolitical risks in the country of Mexico where all of the subject properties are located. PEP's operations may be subject to various levels of governmental controls and regulations. These controls and regulations may include, but may not be limited to, matters relating to land tenure and use, drilling and production practices, environmental protection, marketing and pricing policies, various taxes and levies are subject to change from time to time. Such changes in governmental regulations and policies may cause volumes of proved reserves actually recovered and amounts of proved income actually received to differ significantly from the estimated quantities.

The estimates of proved reserves presented herein were based upon a review of the subject properties; however, we have not made any field examination of the properties. No consideration was given in this report to potential environmental liabilities that may exist nor were any costs included by PEP for potential liabilities to restore and clean up damages, if any, caused by past operating practices.

Certain technical personnel of PEP are responsible for the preparation of reserves estimates on new properties and for the preparation of revised estimates, when necessary, on old properties. These personnel assembled the necessary data and maintained the data and workpapers in an orderly manner. We consulted with these technical personnel and had access to their workpapers and supporting data in the course of our audit.

PEP has informed us that they have furnished us all of the material accounts, records, geological and engineering data, and reports and other data required for this investigation. In performing our audit of PEP's forecast of future proved production, we have relied upon data furnished by PEP with respect to property interests, production and well tests from examined wells, normal direct costs of operating the properties, other costs such as transportation and/or processing fees, recompletion and development costs, development plans, abandonment costs after salvage, product prices based on the SEC regulations, adjustments or differentials to product prices, geological structural and isochore maps, well logs, core analyses, and pressure measurements. Ryder Scott reviewed such factual data for its reasonableness; however, we have not conducted an independent verification of the data furnished by PEP. The data described herein were accepted as authentic and sufficient for determining the reserves unless, during the course of our examination, a matter of question came to our attention in which case the data were not accepted until all questions were satisfactorily resolved. We consider the factual data furnished to us by PEP to be appropriate and sufficient for the purpose of our review of PEP's estimates of reserves. In summary, we consider the assumptions, data, methods and analytical procedures used by PEP and as reviewed by us appropriate for the purpose hereof, and we have used all such methods and procedures that we consider necessary and appropriate under the circumstances to render the conclusions set forth herein.

Audit Opinion

Based on our review, including the data, technical processes and interpretations presented by PEP, it is our opinion that the overall procedures and methodologies utilized by PEP in preparing their estimates of the proved reserves as of December 31, 2021 comply with the current SEC regulations and that the overall proved reserves in terms of barrels of oil equivalent (BOE) for the reviewed properties as estimated by PEP are, in the aggregate, reasonable within the established audit tolerance guidelines of 10 percent as set forth in the SPE auditing standards. Ryder Scott found the processes and controls used by PEP in their estimation of proved reserves to be effective and, in the aggregate, we found no bias in the utilization and analysis of data in estimates for these properties.

We were in reasonable agreement with PEP's estimates of proved reserves for the subject properties that we reviewed; although in certain cases there was more than an acceptable variance between PEP's estimates and our estimates due to a difference in interpretation of data. However notwithstanding, it is our opinion that on an aggregate basis the data presented herein for the subject properties that we reviewed fairly reflects the estimated net reserves owned by the United Mexican States.

Standards of Independence and Professional Qualification

Ryder Scott is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1937. Ryder Scott is employee-owned and maintains offices in Houston, Texas; Denver, Colorado; and Calgary, Alberta, Canada. We have over eighty engineers and geoscientists on our permanent staff. By virtue of the size of our firm and the large number of clients for which we provide services, no single client or job represents a material portion of our annual revenue. We do not serve as officers or directors of any privately-owned or publicly-traded oil and gas company and are separate and independent from the operating and investment decision-making process of our clients. This allows us to bring the highest level of independence and objectivity to each engagement for our services.

Ryder Scott actively participates in industry-related professional societies and organizes an annual public forum focused on the subject of reserves evaluations and SEC regulations. Many of our staff have authored or co-authored technical papers on the subject of reserves related topics. We encourage our staff to maintain and enhance their professional skills by actively participating in ongoing continuing education.

Prior to becoming an officer of the Company, Ryder Scott requires that staff engineers and geoscientists have received professional accreditation in the form of a registered or certified professional engineer's license or a registered or certified professional geoscientist's license, or the equivalent thereof, from an appropriate governmental authority or a recognized self-regulating professional organization. Regulating agencies require that, in order to maintain active status, a certain amount of continuing education hours be completed annually, including an hour of ethics training. Ryder Scott fully supports this technical and ethics training with our internal requirement mentioned above.

We are independent petroleum engineers with respect to PEP. Neither we nor any of our employees have any financial interest in the subject properties, and neither the employment to do this work nor the compensation is contingent on our estimates of reserves for the properties which were reviewed.

The results of this audit, presented herein, are based on technical analysis conducted by teams of geoscientists and engineers from Ryder Scott. The professional qualifications of the undersigned, the technical person primarily responsible for overseeing the review of the reserves information discussed in this report, are included as an attachment to this letter.

Terms of Usage

The results of our third party audit, presented in report form herein, were prepared in accordance with the disclosure requirements set forth in the SEC regulations and intended for public disclosure as an exhibit in filings made with the SEC by Pemex.

Pemex makes periodic filings on Form 20-F with the SEC under the 1934 Exchange Act. Furthermore, Pemex files registration statements with the SEC under the 1933 Securities Act into which filings on Form 20-F are incorporated by reference. We have consented to the references to our name in and the filing of this report as an exhibit to the annual report on Form 20-F of Pemex for the year ended December 31, 2021. Our written consent for such use will be included as a separate exhibit to such Form 20-F. In the event the references to our name as well as references to our report are incorporated by reference into any registration statement on Form F-4, then our written consent for such use will be included as a separate exhibit to such registration statement.

We have provided PEP with a digital version of the original signed copy of this report letter. In the event there are any differences between the digital version included in filings made by PEP and the original signed report letter, the original signed report letter shall control and supersede the digital version.

The data and workpapers used in the preparation of this report are available for examination by authorized parties in our offices. Please contact us if we can be of further service.

Very truly yours,

RYDER SCOTT COMPANY, L.P.
TBPELS Firm Registration No. F-1580

/s/ Guale Ramirez, P.E.

Guale Ramirez, P.E.
TBPELS License No. 48318
President

GR (DCR)/pl

Professional Qualifications of Primary Technical Person

The conclusions presented in this report are the result of technical analysis conducted by teams of geoscientists and engineers from Ryder Scott Company, L.P. Guale Ramirez was the primary technical person responsible for overseeing the estimate of the reserves, future production and income.

Mr. Ramirez, an employee of Ryder Scott Company, L.P. (Ryder Scott) since 1981, is the President and also serves as a member of the Board of Directors. He is responsible for executive management and supervising staff and client relations of the company. Before joining Ryder Scott, Mr. Ramirez served in a number of engineering positions with Sun Oil Company and Natomas North America. For more information regarding Mr. Ramirez's geographic and job specific experience, please refer to the Ryder
Scott Company website at www.ryderscott.com/Employees.

Mr. Ramirez earned a Bachelor of Science Degree in Mechanical Engineering with honors from Texas A&M University in 1976 and is a licensed Professional Engineer in the State of Texas. He is also a member of the Society of Petroleum Engineers and Society of Petroleum Evaluation Engineers.

In addition to gaining experience and competency through prior work experience, the Texas Board of Professional Engineers requires a minimum of fifteen hours of continuing education annually, including at least one hour in the area of professional ethics, which Mr. Ramirez fulfills. As part of his 2021 continuing education hours, Mr. Ramirez attended and internally received 18 hours of formalized training as well as a one day public forum, the 2021 RSC Reserves Conference relating to the definitions and disclosure guidelines contained in the United States Securities and Exchange Commission Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009 in the Federal Register. Mr. Ramirez has also presented courses on the SEC and SPE-PRMS reserves definitions on various occasions during 2011, 2012, 2013, 2015, 2017, 2018 2020 and 2021.

Based on his educational background, professional training and more than 38 years of practical experience in the estimation and evaluation of petroleum reserves, Mr. Ramirez has attained the professional qualifications as a Reserves Evaluator and Reserves Auditor set forth in Article III of the "Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information" promulgated by the Society of Petroleum Engineers as of June 2019.

PETROLEUM RESERVES DEFINITIONS

As Adapted From:
RULE 4-10(a) of REGULATION S-X PART 210
UNITED STATES SECURITIES AND EXCHANGE COMMISSION (SEC)

PREAMBLE

On January 14, 2009, the United States Securities and Exchange Commission (SEC) published the "Modernization of Oil and Gas Reporting; Final Rule" in the Federal Register of National Archives and Records Administration (NARA). The "Modernization of Oil and Gas Reporting; Final Rule" includes revisions and additions to the definition section in Rule 4-10 of Regulation S-X, revisions and additions to the oil and gas reporting requirements in Regulation S-K, and amends and codifies Industry Guide 2 in Regulation S-K. The "Modernization of Oil and Gas Reporting; Final Rule", including all references to Regulation S-X and Regulation S-K, shall be referred to herein collectively as the "SEC regulations". The SEC regulations take effect for all filings made with the United States Securities and Exchange Commission as of December 31, 2009, or after January 1, 2010. Reference should be made to the full text under Title 17, Code of Federal Regulations, Regulation S-X Part 210, Rule 4-10(a) for the complete definitions (direct passages excerpted in part or wholly from the aforementioned SEC document are denoted in italics herein).

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. All reserve estimates involve an assessment of the uncertainty relating the likelihood that the actual remaining quantities recovered will be greater or less than the estimated quantities determined as of the date the estimate is made. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal classifications, either proved or unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-classified as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. Under the SEC regulations as of December 31, 2009, or after January 1, 2010, a company may optionally disclose estimated quantities of probable or possible oil and gas reserves in documents publicly filed with the SEC. The SEC regulations continue to prohibit disclosure of estimates of oil and gas resources other than reserves and any estimated values of such resources in any document publicly filed with the SEC unless such information is required to be disclosed in the document by foreign or state law as noted in §229.1202 Instruction to Item 1202.

Reserves estimates will generally be revised only as additional geologic or engineering data become available or as economic conditions change.

Reserves may be attributed to either natural energy or improved recovery methods. Improved recovery methods include all methods for supplementing natural energy or altering natural forces in the reservoir to increase ultimate recovery. Examples of such methods are pressure maintenance, natural gas cycling, waterflooding, thermal methods, chemical flooding, and the use of miscible and immiscible displacement fluids. Other improved recovery methods may be developed in the future as petroleum technology continues to evolve.

Reserves may be attributed to either conventional or unconventional petroleum accumulations. Petroleum accumulations are considered as either conventional or unconventional based on the nature of their in-place characteristics, extraction method applied, or degree of processing prior to sale. Examples of unconventional petroleum accumulations include coalbed or coalseam methane (CBM/CSM), basin-centered gas, shale gas, gas hydrates, natural bitumen and oil shale deposits. These unconventional accumulations may require specialized extraction technology and/or significant processing prior to sale.

Reserves do not include quantities of petroleum being held in inventory.

Because of the differences in uncertainty, caution should be exercised when aggregating quantities of petroleum from different reserves categories.

RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(26) defines reserves as follows:

Reserves. *Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce or a revenue interest in the production, installed means of delivering oil and gas or related substances to market, and all permits and financing required to implement the project.*

Note to paragraph (a)(26): Reserves should not be assigned to adjacent reservoirs isolated by major, potentially sealing, faults until those reservoirs are penetrated and evaluated as economically producible. Reserves should not be assigned to areas that are clearly separated from a known accumulation by a non-productive reservoir (i.e., absence of reservoir, structurally low reservoir, or negative test results). Such areas may contain prospective resources (i.e., potentially recoverable resources from undiscovered accumulations).

PROVED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(22) defines proved oil and gas reserves as follows:

Proved oil and gas reserves. *Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.*

(i) The area of the reservoir considered as proved includes:

(A) The area identified by drilling and limited by fluid contacts, if any, and

(B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.

PROVED RESERVES (SEC DEFINITIONS) CONTINUED

(ii) In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.

(iii) Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.

(iv) Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:

(A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and

(B) The project has been approved for development by all necessary parties and entities, including governmental entities.

(v) Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

PETROLEUM RESERVES STATUS DEFINITIONS AND GUIDELINES

As Adapted From:
RULE 4-10(a) of REGULATION S-X PART 210
UNITED STATES SECURITIES AND EXCHANGE COMMISSION (SEC)

and

2018 PETROLEUM RESOURCES MANAGEMENT SYSTEM (SPE-PRMS)
Sponsored and Approved by:
SOCIETY OF PETROLEUM ENGINEERS (SPE)
WORLD PETROLEUM COUNCIL (WPC)
AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (AAPG)
SOCIETY OF PETROLEUM EVALUATION ENGINEERS (SPEE)
SOCIETY OF EXPLORATION GEOPHYSICISTS (SEG)
SOCIETY OF PETROPHYSICISTS AND WELL LOG ANALYSTS (SPWLA)
EUROPEAN ASSOCIATION OF GEOSCIENTISTS & ENGINEERS (EAGE)

Reserves status categories define the development and producing status of wells and reservoirs. Reference should be made to Title 17, Code of Federal Regulations, Regulation S-X Part 210, Rule 4-10(a) and the SPE-PRMS as the following reserves status definitions are based on excerpts from the original documents (direct passages excerpted from the aforementioned SEC and SPE-PRMS documents are denoted in italics herein).

DEVELOPED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(6) defines developed oil and gas reserves as follows:

Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

> *(i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and*
>
> *(ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.*

Developed Producing (SPE-PRMS Definitions)

While not a requirement for disclosure under the SEC regulations, developed oil and gas reserves may be further sub-classified according to the guidance contained in the SPE-PRMS as Producing or Non-Producing.

Developed Producing Reserves

Developed Producing Reserves are expected quantities to be recovered from completion intervals that are open and producing at the effective date of the estimate.

Improved recovery reserves are considered producing only after the improved recovery project is in operation.

Developed Non-Producing

Developed Non-Producing Reserves include shut-in and behind-pipe Reserves.

Shut-In

Shut-in Reserves are expected to be recovered from:

(1) completion intervals that are open at the time of the estimate but which have not yet started producing;
(2) wells which were shut-in for market conditions or pipeline connections; or
(3) wells not capable of production for mechanical reasons.

Behind-Pipe

Behind-pipe Reserves are expected to be recovered from zones in existing wells that will require additional completion work or future re-completion before start of production with minor cost to access these reserves.

In all cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.

UNDEVELOPED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(31) defines undeveloped oil and gas reserves as follows:

Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

(i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.

(ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstances, justify a longer time.

(iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir, as defined in paragraph (a)(2) of this section, or by other evidence using reliable technology establishing reasonable certainty.

Exhibit 17.1

Subsidiary Guarantors and Issuers of Guaranteed Securities

Each of the following securities issued by Petróleos Mexicanos is unconditionally and fully guaranteed, jointly and severally by *Pemex Exploración y Producción* (Pemex Exploration and Production), *Pemex Transformación Industrial* (Pemex Industrial Transformation) and *Pemex Logística* (Pemex Logistics), each a productive state-owned company of the Federal Government of Mexico:

Title of Each Class	
5.375% Notes due 2022	4.875% Notes due 2022
8.625% Bonds due 2022	Floating Rate Notes due 2022
4.625% Notes due 2023	3.500% Notes due 2023
4.875% Notes due 2024	8.625% Guaranteed Bonds due 2023
6.875% Notes due 2025	4.250% Notes due 2025
4.500% Notes due 2026	6.875% Notes due 2026
6.490% Notes due 2027	5.350% Notes due 2028
9.500% Guaranteed Bonds due 2027	6.840% Notes due 2030
6.500% Notes due 2027	6.700% Notes due 2032
6.500% Notes due 2029	6.625% Guaranteed Bonds due 2035
5.950% Notes due 2031	6.500% Bonds due 2041
6.625% Guaranteed Bonds due 2038	6.375% Bonds due 2045
5.500% Bonds due 2044	5.625% Bonds due 2046
6.750% Bonds due 2047	6.350% Bonds due 2048
7.690% Bonds due 2050	6.950% Bonds due 2060