Sustainability Plan of Petróleos Mexicanos
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Sustainability Plan of Petróleos Mexicanos

March, 2024

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This document contains forward-looking statements, which involve risks and uncertainties, thus actual results may differ from those projected due to exogenous factors to Petróleos Mexicanos (Pemex). These include, among others:

• Significant domestic and global political or economic events that generate changes in economic and business conditions, including international crude oil and natural gas prices, refining margins and exchange rates, changes in the Government’s vision for the energy sector
• Credit ratings and limitations to access financial resources on competitive terms
• Level of financial and other types of support that Pemex receives from the Federal Government

• Competition effects
• Uncertainties inherent to oil and gas reserve estimates
• Technical difficulties
• Development of events affecting the energy sector
• Changes in legal and regulatory frameworks, including fiscal and environmental regulations
• Natural disasters, accidents, blockades, and acts of sabotage or terrorism
• Cost and access to insurance coverage
• Problems that arise in the execution of projects

Forward-looking statements are prepared with the latest information, based on what has happened up to the indicated dates throughout the document.
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Message from the CEO

Events in recent years have led to changes and new ways of operating by countries, societies, and companies; however, the call for climate action remains and is becoming increasingly urgent and compelling around the world.

The challenge of generating the energy that society needs requires a responsible and committed perspective that recognizes the value of climate action, but also the different conditions and levels of development that exist in societies around the world. This is reflected in the different starting points towards the same goal of net zero emissions by 2050.

On its course to sustainable performance and as a state-owned Productive Company, Pemex is aware of its contribution to Mexico's energy self-sufficiency and its role in the transition to an efficient, safe, and low-emission operations scenario. All of this is, in an environment of change in the global energy matrix, driven by climate action within a framework of social responsibility that incorporates the perspective of sustainability in decision-making.

Within Mexico's legislation framework and in line with the Government’s efforts and commitments to climate action, the Sustainability Plan of Petróleos Mexicanos clearly sets out Pemex's emission reduction targets to 2030 and, in line with the domestic energy sector evolution perspectives, formulates ambitions towards net zero emissions by 2050.

In response to our stakeholders, this document establishes the company’s positioning and commitment to an ethical and sustainable performance that reinforces Pemex's role as a lever for development and an agent of change for climate action in the domestic energy sector.

Octavio Romero Oropeza
CEO

ORO/VMNC
1. Context

The Sustainability Plan of Petróleos Mexicanos delineates Pemex’s sustainability strategy and is aligned with the sustainability plans of oil and gas companies of its peer group, as well as other world-class corporations.

The structure, content and scope of the Sustainability Plan reinforce the focus on sustainability anchored in the Business Plan 2023-2027 and address the most relevant topics to Pemex’s stakeholders (material topics), as identified through a materiality analysis that included interviews and surveys:

- Internally, the Sustainability Committee of Pemex Board of Directors, the CEO and Corporate Directors, and organizational departments related to financing, risk management, environment and energy efficiency, safety and occupational health, inclusion, social responsibility and legal compliance, social communication, and supplier relations

- Externally, including stakeholders relevant to Pemex from the banking and financial sectors, as well as public administration authorities related to environmental and safety regulations, gender equality, indigenous groups, and industry associations

The experience gained from similar projects with companies of its peer group and the expertise of the consulting firm that collaborated with Pemex established the basis for the materiality analysis and its results, presented in the materiality matrix. The sustainability plan focuses on the most material topics identified in this matrix.

The decarbonization strategy, initiatives and actions were defined based on opportunities and challenges identified throughout Pemex’s value chain and business model, in the context of an evolving domestic energy scenario impacted by the call for climate action.

Elements aimed at strengthening and promoting conditions for corporate governance are presented as key enablers of the sustainability strategy. In terms of social responsibility and environmental management, this plan structures and discloses efforts to strengthen occupational health and industrial safety, anti-corruption culture and ethics, as well as community relations.

In addition to the support provided by the consulting firm, the strength of this document is supported by the synergy achieved through the participation of the Sustainability Committee, the company’s corporate finance, planning, administrative and legal offices, as well as the head offices and operational areas of the Subsidiary Productive Companies.
2. Materiality analysis

The materiality analysis identifies the most impactful topics that set the focus of the Sustainability Plan.

Relevant topics for Pemex’s operations and stakeholders:

1. Workplace harassment
2. Water
3. Anticorruption
4. Biodiversity
5. Facility closure and abandonment
6. Conflicts and security
7. Pollution from operational accidents (soil)
8. Human rights of indigenous groups
9. Energy efficiency
10. Air emissions (non-GHG)
11. GHG Emissions
12. Accessible and affordable energy
13. Management of critical incidents
14. Economic and social impact
15. Impact on public policies
16. Waste management and recycling
17. Non-discrimination and equal opportunities
18. Employment practices
19. Relationship with communities
20. Transition risks
21. Physical risks
22. Healthcare
23. Occupational health
24. Consumer health and safety
25. Operational safety
26. Cybersecurity

The Sustainability Plan integrates all material factors with a high external and credit impact for Pemex. Greater emphasis has been placed on the analysis of emission reduction and energy transition matters due to their high credit impact for the company.

Source: Pemex, S&P Global Commodity Insights.

Note: The Sustainability Plan integrates all material factors with a high external and credit impact for Pemex. Greater emphasis has been placed on the analysis of emission reduction and energy transition matters due to their high credit impact for the company.
3. Risks

Pemex is exposed to business risks associated to energy transition and climate change impact.

**ENERGY TRANSITION RISKS**

<table>
<thead>
<tr>
<th>Technology and market</th>
<th>Potential financial impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in the configuration of global energy markets with potential to greatly impact the current business model of oil and gas companies.</td>
<td>• Increasing demand for low-carbon products</td>
</tr>
<tr>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulatory and legal</th>
<th>Potential financial impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential changes in regulation, public policies, and increased exposure to climate litigation.</td>
<td>• Implementation of carbon pricing mechanisms</td>
</tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Reputational</th>
<th>Potential financial impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in public perception and potential stigmatization of certain industrial sectors.</td>
<td>• Increased stakeholder concern about environmental and climate issues</td>
</tr>
<tr>
<td></td>
<td>• Reduction in the availability of capital for investments in the hydrocarbons sector</td>
</tr>
</tbody>
</table>

Considering the strategy of this Plan, Pemex will publish its risks and opportunities on sustainability and climate risk issues in accordance with the requirements of International Financial Reporting Standards (IFRS) S1 for 2024 and IFRS S2 for 2025 proposed by the International Sustainability Standards Board (ISSB), which are aligned with the Task Force on Climate Related Financial Disclosure (TCFD) recommendations.

Source: S&P Global with review of UNEP FI and TCFD reports.
Energy scenarios outline implications of potential transition and GHG emission reduction trajectories.

### Key Assumptions and Narratives of S&P Global’s Three Selected Energy and Climate Scenarios

#### Inflections
- High oil prices drive investments in exploration and production in the middle term
- Global peak demand for liquids in 2031
- In Mexico, energy security is prioritized, the country pushes for efficiency measures and changes in its energy matrix, but fossil energy continues to play a central role. Electrification is the main driver of sectoral changes in crude oil demand

#### Green Rules
- A revolutionary shift in the use, supply and emissions of the energy sector creates uncertainty about oil and gas investments
- Reduced price due to intensified policies on oil demand between 2030 and 2040. The lowest-cost producers survive
- Global peak demand for liquids in 2026
- Demand for refined products remains relatively high in Mexico due to the lag in the adoption of electric vehicles

#### Multi-Tech Mitigation
- This case of net-zero GHG emissions by 2050 outlines the energy implications of meeting the Paris Agreement
- Industrialized economies implement clean technologies in all sectors. Electricity sector is fully decarbonized by the end of the 2040s
- Carbon pricing or taxes are implemented in all markets by 2035
- Global peak demand for liquids in 2026

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**Final energy (2050) MMtoe Growth 2022 - 2050**

- **Inflections**
  - Final energy (2050) MMtoe: 180
  - Growth 2022 - 2050: 85%
- **Green Rules**
  - Final energy (2050) MMtoe: 146
  - Growth 2022 - 2050: 79%
- **Multi-Tech Mitigation**
  - Final energy (2050) MMtoe: 101
  - Growth 2022 - 2050: 70%

**Source:** S&P Global Commodity Insights
For the *Inflections* scenario, total global demand for liquids is expected to peak in 2031, although for refined products it happens three years earlier.

**ENERGY TRANSITION SCENARIOS**

The peak demand for crude oil is not a singular event, a series of peaks in demand are expected in the coming years that will jointly restructure the oil market towards a new post-growth era: first, the peak of growth; then, the peak for refined products; and finally, the peak for total liquids. The peak of total global liquid demand in 2031 in the *Inflections* scenario may still be a few years away, however:

- The peak in oil demand growth happened in 2022/23 due to COVID rebound, exceeding the one observed in 2017.
- The peak demand for refined products is fast approaching. Global demand for *refined products* excluding natural gas liquids and crude combustion is expected to peak in 2028 at 80.2 MMbd, up from 77.4 MMbd on average this year.

In Mexico, the demand for crude oil in the *Inflections* scenario maintains a growth between 1.5 and 1.6 MMbd, reaching its peak towards the middle of the next decade.

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1 Total liquids, including refined petroleum-based products, associated and non-associated gas NGLs from crude oil and gas reservoirs, direct crude oil burning, biofuels, refinery processing profits, refinery additives, gas-to-liquid, and coal-to-liquid equivalences.

The domestic fossil fuel market is exposed to risks associated with public policies, technological and consumer preference changes associated with the energy transition.

DEMAND FOR PETROLEUM PRODUCTS IN MEXICO UNDER SELECTED SCENARIOS

Key assumptions
- Demand for petroleum products slows down from 2030 due to a combination of public policies that encourage the electrification of transport fleets and internal policies of automotive companies
- Carbon tax reaches US$55/tCO₂ by 2040
- Restrictions on ICEVs²
- Reduction of fossil fuel subsidies
- Increased fuel efficiency
- Increased use of biofuels and electrification of transport

Key assumptions
- Includes Green Rules policies
- Carbon tax reaches US$270/tCO₂ by 2040 supplemented by other incentives and mandates to reduce fossil fuel consumption
- Carbon tax reaches US$350/tCO₂ by 2050

1 Liquefied petroleum gases (including ethane).
2 Internal Combustion Engine Vehicle.

Note: The Refining series corresponds to the Inflections scenario.

Source: S&P Global Commodity Insights.

Pemex has assessed the financial impact of these risk factors and believes that the potential impact on long term revenues is significant.
Physical risks from climate change

Identification

Pemex has identified that its facilities are exposed to meteorological hazards, with increased incidence due to climate change. These weather threats have the potential to physically damage facilities and disrupt operations, resulting in a reduction in the company’s ability to generate economic value.

Acute hazards: geographically and temporally delimited extreme weather hazards

- Rain/river floods
- Storms/hurricanes
- Heat waves
- Fires
- Droughts

Risk factors for climate hazards:
- Economic losses due to damaged assets
- Business interruption with impact on production
- Increase in insurance premiums for having assets with high vulnerability or located in areas with high exposure

Chronic hazards: weather hazards that change continuously over time, which are related to the average global surface temperature

- Sea level rise
- Changes in precipitation patterns
- Changes in wind patterns
- Water stress
- Heat stress

Risk factors for long-term climate hazards:
- Economic losses due to damage to assets
- Potential exclusions from insurance coverage for assets with high vulnerability or located in areas with high exposure
- Impact on production, operations, supply and distribution chain, and customers

Assessment and management

Pemex is in the process of acquiring a specialized tool for physical risk assessment. This will allow to identify facilities with greater levels of exposure and/or vulnerability to climate hazards and to determine the corresponding adaptation and/or management strategies.

Access to maps that showcase risks associated with climatic hazards such as floods, droughts, fires, hurricanes, sea level rise, heat waves, among others, in geographical locations where Pemex’s assets are identified as both strategic and/or those more vulnerable to climate change.

- Assessment of exposure to each climate hazard by region, asset portfolio or for each Pemex asset, to identify the most vulnerable facilities and the type of climate threat they are exposed to
- Classify exposure by acute or chronic risks (TCFD)
- With this information, the main adaptation and/or mitigation strategies will be determined and submitted for approval by Pemex’s Risk Committee and other competent authorities

Assessment of physical risks in future climate scenarios, such as those adopted by the IPCC (Intergovernmental Panel on Climate Change): RPC (Representative Concentration Pathway) and SSP (Shared Socioeconomic Pathways) (TCFD) scenarios.
4. Sustainability strategic pillars

The Sustainability Plan focuses on the most material topics and is structured around five key pillars, aligned with the Business Plan 2023-2027.

**MATERIAL TOPICS WITH THE GREATEST IMPACT**

- Transition risks
- GHG emissions
- Physical risks
- Pollution by operational accidents
- Air emissions
- Management of critical accidents
- Process safety
- Occupational health
- Relationship with communities
- Anticorruption

**SUSTAINABILITY STRATEGIC PILLARS**

**ENVIRONMENT**

- GHG emissions and energy transition
  - GHG emissions reduction
  - Low-carbon business opportunities
- Environment
  - Water and soil
  - Biodiversity
  - Air emissions (non-GHG emissions)

**OPERATIONAL SAFETY**

- Industrial safety and occupational health
- Physical security and fight against illegal fuel markets
- Data governance and cybersecurity

**SOCIAL**

- People and social value
  - Inclusion, equality, and non-discrimination
  - Relationship with communities
  - Human capital and work environment
  - Development of domestic supply

**GOVERNANCE**

- Corporate responsibility and transparency
  - Anticorruption
  - Ethics and integrity
  - Institutional processes
  - Transparency and accountability
  - Responsible financial decisions

Pemex’s comprehensive sustainability strategy is established in the Business Plan 2023-2027.

1 Non-GHG emissions
The Sustainability Plan addresses the Sustainable Development Goals (SDGs) and aligns with the strategies defined in the Business Plan.

**GHG emissions and energy transition**
- EA.1 Reduce GHG emissions and contribute to climate adaptation
- EA.3 Increase energy efficiency

**Environment**
- EA.1 Reduce GHG emissions and contribute to climate adaptation

**Operational safety**
- ES.1 Reduce risks of process safety and occupational health, also prevent personal and industrial accidents to improve industrial safety performance

**People and social value**
- ES.6 Strengthen the relationship with communities through socially responsible actions that promote operational continuity

**Corporate responsibility and transparency**
- EG.3 Promote a compliance culture to prevent fraud, corruption, and compliance risks, while strengthening corporate ethics and integrity
Sustainability Strategic Pillars

The **GHG Emissions and Energy Transition** pillar focuses on the two most relevant material topics for the oil and gas sector and its stakeholders.
GHG emissions and energy transition

Gas flaring and stationary combustion represent the biggest opportunities for emissions reductions in the value chain.

**SCOPE 1 AND 2 GHG EMISSIONS (2021)**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Scope 1</th>
<th>Scope 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment combustion</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Flaring</td>
<td>16</td>
<td>57%</td>
</tr>
<tr>
<td>Fugitives and venting</td>
<td>10</td>
<td>70%</td>
</tr>
<tr>
<td>Logistics</td>
<td>4</td>
<td>78%</td>
</tr>
<tr>
<td>Petrochemicals</td>
<td>2</td>
<td>72%</td>
</tr>
</tbody>
</table>

E&P: Equipment, Flaring, and Fugitives and venting

Refining: 18% Scope 1, 26% Scope 2

Gas processing: 5% Scope 1, 17% Scope 2

Petrochemicals: 4% Scope 1, 19% Scope 2
Emission reduction

GHG emission reduction targets.
Aligned to Mexico’s Nationally Determined Contribution (NDC) and to the 14% reduction allocated to the oil and gas sector.

**GHG EMISSIONS INTENSITY (SCOPE 1)**

1 Only the segments for which Pemex has defined targets are presented, excluding Deer Park.
2 Reduction measured in methane emissions intensity by business line, compared to base year 2020.

- **Additional goals**
  - From 2024, achieve at least a gas utilization level of 98% in E&P
  - By 2030, achieve a 30% reduction in methane emissions
  - Zero routine gas flaring in E&P by 2030

**Ambition to 2050**
- Net-zero scope 1 and 2 GHG emissions
Emission reduction initiatives were prioritized based on their abatement impact and marginal cost of abatement after a comprehensive review.

**MARGINAL ABATEMENT COST CURVE IN 2030**

The initiatives focus on emission sources with the greatest abatement potential, such as routine flaring, which mostly has an abatement cost under US$20/tCO₂e.

Gas price of $3/MMcf is assumed.
Source: Analysis by S&P Global Commodity Insights, with information from Pemex.
Initiatives to achieve 2030 goals were consolidated into lines of action.

**SCOPE 1 EMISSIONS INTENSITY**

_**kgCO₂e/boe, excluding petrochemicals**_

**Strategy:** Reduce greenhouse gas (GHG) emissions.

2021 intensity (E&P, gas processing and refining)

- Abatement achieved by 2023¹
- Routine flaring reduction in E&P and gas centers, and commitment to zero-routine flaring in new fields development
- Efficient cogeneration projects²
- Detection, quantification, and elimination of methane emissions
- Reduction of CO₂ and CH₄ vents to the atmosphere
- Energy efficiency and combustion emissions reduction in refineries and petrochemicals complexes
- Routing flaring reduction in refining
- Offsets with high-quality carbon credits³

**2030 remaining intensity**

Annex 2 describes the lines of action.

¹ Considers absolute emissions and annualized production/process data, based on preliminary data as of August 2023. It mainly reflects the impact of infrastructure works in the Ixachi and Quesqui fields, the expansion of gas re-injection in KMZ areas, and flaring reduction works in La Venta and Nuevo Pemex gas processing centers.

² Efficient cogeneration projects contribute significantly to the achievement of Scope 1 emissions targets in the refining segment. However, they have a negative impact on Scope 2 emissions.

³ The company will prioritize emissions reduction initiatives in its own operations and aims to use credits as a compensatory measure, prioritizing high-quality credits within industry accepted verification schemes.

Source: S&P Global Commodity Insights analysis with Pemex data.
Low-carbon business opportunities to be evaluated with a long-term viability approach that will improve Scope 3 emissions.

1 Business lines opportunities in Deer Park that don’t impact emissions reduction goals of facilities located in Mexico.
2 US GoM: US Gulf Coast of Mexico.
3 SAF: Sustainable Aviation Fuel.
4 Biofuels does not consider anhydrous ethanol.
In a global environment of climate ambition, low-carbon business opportunities will allow Pemex to diversify revenues and mitigate transition risks.

<table>
<thead>
<tr>
<th>Technology maturity level</th>
<th>Market size¹ (Mexico) Billion US$</th>
<th>Public policy / Regulatory framework</th>
<th>Potential implementation strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature-based solutions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Several</td>
<td>-</td>
<td></td>
<td>• Purchase of credits to offset own emissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Development of own reforestation projects</td>
</tr>
<tr>
<td>Carbon Capture and Storage (CCS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early adoption</td>
<td>-</td>
<td></td>
<td>• Support in the development of the regulatory framework</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Pilot project in gas processing centers and petrochemical plants</td>
</tr>
<tr>
<td>Green hydrogen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early adoption</td>
<td>2030: 11 2040: 13 2050: 14</td>
<td></td>
<td>• Support in the development of the regulatory framework</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Import green H₂ Texas → Nuevo León</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• JV³ CFE for domestic production of green H₂</td>
</tr>
<tr>
<td>Clean generation / Charging infrastructure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mature</td>
<td>2030: 6 2040: 16 2050: 26</td>
<td></td>
<td>• Optimization and expansion of cogeneration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• JV with charging infrastructure company</td>
</tr>
<tr>
<td>Biofuels / RNG²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mature</td>
<td>2030: 5 2040: 13 2050: 16</td>
<td></td>
<td>• Support in the development of incentive schemes</td>
</tr>
</tbody>
</table>

¹ Market size estimated by S&P Global assuming the long-term Green Rules energy scenario.
² Renewable Natural Gas, produced by degrading organic matter.
³ JV refers to joint ventures that could be favorable to Pemex to enter a new business line with a reduced risk exposure.
Source: S&P Global Commodity Insights.
The **Environment** pillar focuses on the most relevant material topics to the oil and gas sector and stakeholders.
## Environment

Initiatives to reduce and mitigate environmental impact and for biodiversity conservation.

### Environment

**Strategy:** Reduce and mitigate environmental impact and strengthen actions for biodiversity conservation.

<table>
<thead>
<tr>
<th>Material topic</th>
<th>Lines of action</th>
<th>Goals 2030&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
</table>
| **Water and soil**      | - Reduce water use by identifying and repairing leaks  
- Increase water reuse in refineries through efficiency and rehabilitation initiatives  
- Reduce environmental liabilities through remediation programs for sites affected by oil spills                                                                 | - Reduce water use index in downstream operations: 39% in refineries; 42% in gas processing centers and 76% in ethane derivatives, 50% in methanol and aromatic, 9% in ammonia production  
- Double the level of reuse of water in refineries (56.4 MMm<sup>3</sup>)  
- Remediate at least 361 ha of environmental liabilities (2024-2030 horizon)                                                                 |
| **Air emissions**       | (non-GHG emissions)                                                                                                                                                                                            |                                                                                                                                                                                                                        |
| **Biodiversity**        | - Reduce sulfur oxide emissions in Gas Processing Centers through sulfur plant rehabilitation                                                                                                                 | - Reduce SOx emissions in Gas Processing Centers by 90%                                                                                                                                                                 |
|                         |                                                                                                                                                                                                              |                                                                                                                                                                                                                        |
|                         | - Promote the preservation of Areas Voluntarily Dedicated to Conservation (Jaguaroundi and Tuzandépetl Ecological Parks) and their environmental services  
- Develop studies to define strategies for biodiversity management  
- Promote the conservation of the environment (strengthen projects of the National Commission of Natural Protected Areas for the conservation of natural resources) | - Reach at least two thousand hectares of protected natural areas                                                                                                                                                      |

<sup>1</sup> 2030 goal compared to 2021.
In **Operational safety**, the Sustainability Plan focuses on improving working conditions and preventing accidents.
Industrial Safety and Occupational Health (OSH) Initiatives

Strategy: Reduce risks of process safety and occupational health, also prevent personal and industrial accidents to improve industrial safety performance.

<table>
<thead>
<tr>
<th>Material topic</th>
<th>Lines of action and initiatives</th>
<th>Goals 2030</th>
</tr>
</thead>
</table>
| **Industrial safety** | Prevention of accidents in operational processes  
  • Execution of audits of the Security System  
  • Attention to Type A audit findings  
  • Attention to Type A (intolerable/critical) risks |  
  • Zero findings of SSPA System non-conformances  
  • 100% attention to Type A audit findings*  
  • 100% attention to Type A risks*  |
| | SSPA System Update  
  • Improve the Frequency Index to 0.21  
  • Reduce the frequency rate of process safety events to 1.3  
  • Zero fatalities  |
| | Accident prevention program in low-performing centers  
  • Establish and implement reinforcement programs  
  • On-site verification of reinforcement programs |  |
| | Prevention, evaluation, and control of occupational health risks  
  • Update of Risk Atlas and Health diagnostics in the workplace  
  • Implementation of an Occupational Health Program to control risk agents and factors  
  • Evaluation of the Program for the Prevention, Identification, Evaluation and Control of Health Risks |  
  • Ensure 100% control of exposure to biological, physical and/or chemical agents  |

**Initiatives to strengthen the health and safety culture through the SSPA system**

- Strategic, tactical, and operational accountability
- SSPA Day Celebration (may 2024)
- Training of SPCs staff in OSH topics, according to their categories and critical roles

* With respect to immediate previous year.
The **People and Social Value** pillar of the Sustainability Plan strengthens actions to improve surroundings and promote economic and social development.
People and social value

Pemex's initiatives aligned with the SDGs aimed at improving surroundings and promoting economic and social development.

**Relationship with communities**

**Strategy:** Strengthen the relationship with communities through social responsibility actions that contribute to improving people's lives and promoting community prosperity, in accordance with the SDGs.

<table>
<thead>
<tr>
<th>Material topic</th>
<th>Lines of action</th>
<th>Goals 2030¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relationship with communities / management of surroundings</strong></td>
<td>Improve access to quality health services and reduce premature mortality from preventable diseases through the operation of mobile medical units, equipping and modernization of infrastructure in clinics and hospitals.</td>
<td>Benefit at least 800,000 people, more than 50% of whom be women.</td>
</tr>
<tr>
<td></td>
<td>Promote educational development in communities through the construction, adaptation and equipping of educational facilities.</td>
<td>Improve at least 700 public schools.</td>
</tr>
<tr>
<td></td>
<td>Increase the productivity and income of small producers by providing supplies, equipment and machinery that add value to the process.</td>
<td>Expand coverage to agrarian nuclei, cooperatives, ejidos and/or communities in all priority states.</td>
</tr>
<tr>
<td></td>
<td>Strengthen capacities of local governments to provide basic public services required for the well-being, security, and development of individuals and communities, through the delivery of vehicles, specialized equipment, and fuel.</td>
<td>Benefit at least 16 state governments and 30 municipal governments.</td>
</tr>
<tr>
<td></td>
<td>Build and rehabilitate roads, streets, and avenues by developing reliable and quality infrastructure, which promotes mobility, economic development, and human well-being, through infrastructure works and asphalt delivery.</td>
<td>Achieve at least 10% of actions aimed at the infrastructure axis.</td>
</tr>
<tr>
<td></td>
<td>Contribute to the recovery of public space through the construction and rehabilitation of urban infrastructure; to strengthen the social fabric, as well as to promote social inclusion and access to safe, inclusive, and accessible green areas and public spaces.</td>
<td>Impact at least 130 public spaces.</td>
</tr>
</tbody>
</table>

¹ In the 2024-2030 period.
Community intervention model
Communities take an active part in decision-making about Pemex’s social responsibility activities and actions.

Instruments to materialize social responsibility actions

<table>
<thead>
<tr>
<th>Donation of petroleum products</th>
<th>Community and Environment Support Program (PACMA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Materialize programs, construction works and/or actions for the benefit of the surrounding communities.</td>
</tr>
<tr>
<td>Provide asphalt and fuels mainly to state and municipal governments.</td>
<td></td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Promote sustainable development with actions in the areas of education, productive projects, environmental protection, health, urban and road infrastructure, public safety, and civil protection.</td>
</tr>
<tr>
<td>Strengthen the institutional capacities of local governments in the provision of public services to contribute to regional development and the improvement of people’s lives, promoting community prosperity.</td>
<td></td>
</tr>
<tr>
<td><strong>Source of funding</strong></td>
<td>Contractual obligation of suppliers and contractors to contribute 1% of the amount spent of contracts equaling or surpassing 100 million pesos.</td>
</tr>
<tr>
<td>Annual provision authorized by the Board of Directors for asphalt and fuels, and its equivalent in money.</td>
<td></td>
</tr>
<tr>
<td><strong>Collegiate body to authorize actions</strong></td>
<td>Social Responsibility Group for Donations (Grupo de Otorgamiento de Apoyo en Materia de Responsabilidad Social).</td>
</tr>
<tr>
<td>Technical Committee for Regional Evaluation.</td>
<td></td>
</tr>
</tbody>
</table>
Sustainability Strategic Pillars

The Sustainability Plan reinforces the compliance strategy and corporate ethics.
Corporate responsibility and transparency

Pemex operates and promotes institutional ethics values among its staff and stakeholders.

- Respect
- Honesty
- Legality
- Equality and non-discrimination
- Loyalty
- Impartiality
- Effectiveness
- Responsibility
- Integrity

Pemex Cumple compliance program seeks to mitigate compliance, legal and corruption risks, generate ethical chains with suppliers, contractors, customers, partners, and investors and improve trust in the company by society.

Its four strategic axes are aligned with ESG criteria and in compliance with national and international standards.

- Strengthen governance in a timely and effective manner
- Strengthen the ethical behavior of human capital
- Prevent and punish corruption acts
- Promote, measure, and reinforce the culture of compliance in day-to-day operations
- Promote transparency, access to information, accountability, and protection of personal data
- Assess the robustness of controls and/or conduct periodic monitoring

Sustainability Strategic Pillars

Based on the Business Plan, the Sustainability Plan focuses on the corporate responsibility strategy.

**Corporate responsibility and transparency**

**Strategy:** Promote a compliance culture to prevent fraud, corruption, and compliance risks, while strengthening corporate ethics and integrity.

<table>
<thead>
<tr>
<th>Material topic</th>
<th>Lines of action and initiatives</th>
<th>Goals 2030</th>
</tr>
</thead>
</table>
| **Anticorruption** | [Culture of Compliance:](#)  
  - Strengthen the implementation of the "Pemex Cumple" compliance program | - Achieve at least 90% compliance with the comprehensive training program for Pemex Cumple¹ |
|                   | [Zero tolerance for corruption:](#)  
  - Prevent conflicts of interest in commercial agreements with third parties  
  - Encourage the use of the Ethics Hotline  
  - Prevent corruption risks  
  - Anti-Corruption training  
  - Update psychometric evaluations to strengthen controls and reliability tests in the evaluation of candidates to positions susceptible to corruption | - Ensure due diligence application of at least 90% to third parties |

¹ This goal integrates training on: Internal codes, Anti-Corruption Policy, Conflict of Interest, and Transparency and Data Protection Issues.
5. Financial resources requirement

The fulfillment of the goals will be supported by the availability of the required financial resources.

### ESTIMATED REQUIRED EXPENDITURE TO TOTAL CAPEX

<table>
<thead>
<tr>
<th>Year</th>
<th>Emission reduction</th>
<th>Industrial safety</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2024</td>
<td>14%-18%</td>
<td>12%-16%</td>
<td>1%</td>
</tr>
<tr>
<td>2025</td>
<td>10%-14%</td>
<td>10%-14%</td>
<td>1%</td>
</tr>
<tr>
<td>2026</td>
<td>10%-14%</td>
<td>10%-14%</td>
<td>1%</td>
</tr>
<tr>
<td>2027</td>
<td>10%-14%</td>
<td>10%-14%</td>
<td>1%</td>
</tr>
<tr>
<td>2028</td>
<td>10%-14%</td>
<td>10%-14%</td>
<td>1%</td>
</tr>
<tr>
<td>2029</td>
<td>10%-14%</td>
<td>10%-14%</td>
<td>1%</td>
</tr>
<tr>
<td>2030</td>
<td>10%-14%</td>
<td>10%-14%</td>
<td>1%</td>
</tr>
</tbody>
</table>

### KEY ENABLERS

- **Operational**: Prioritize maintenance and rehabilitation initiatives with ESG impact.
- **Budgetary**: Propose a scheme to regulate the allocation of the necessary resources with regulated conditions for budget withdrawal or reallocation.
- **Financial**: Give visibility in the budget towards investments for sustainable initiatives.
- **Governance**: Negotiate with the Secretariat of Finance and Public Credit (SHCP) the mechanisms to capture financing opportunities for ESG projects.
- **Governance**: Internalize the impact of GHG emissions in investment decisions to project prioritization (internal carbon price).

---

1 Total CAPEX: corresponds to the average amount of investment exercised in the period 2021 to 2023 (estimated). It does not include PACMA resources for social responsibility actions.

2 Includes works from Ixachi, Quesqui and Tupilco Profundo in 2024.

Source: Pemex and S&P Global with Pemex data.
### 6. Key enablers

Key enablers for the implementation of the Sustainability Plan.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Key enablers</th>
</tr>
</thead>
</table>
| Capital allocation and financing | • **Prioritize budget allocation for maintenance and rehabilitation initiatives** with ESG impact; propose schemes to withdraw or reallocate budget to these activities  
• Negotiate with the SHCP the **definition of mechanisms to capture financing opportunities** for ESG projects  
• Internalize the impact of GHG emissions in **capital allocation decisions through a CO₂ internal price** to prioritize ESG and transition projects  
• Give visibility in the budget to sustainability investments |
| Governance for sustainability    | • Commitment to **manage hydrocarbon production** to minimize flaring and GHG emissions  
• Develop an **administrative reorganization** within the framework of the Process Management Based Operating Model to strengthen the coordination and implementation of ESG topics  
• Identify **capability gaps** and secure human and technological resources for execution  
• **Adapt internal regulatory framework** in line with sustainable development |
| Data, measurements, and verifications | • Improve the **reliability of the GHG emissions inventory** through specific measurement of vents and fuel consumption  
• Adopt a **frequent monitoring and quantification program** of methane emissions |
| Communication and engagement     | • Maintain clear, up-to-date, and bilingual **communication channels**  
• Expand the use of reporting standards  
• Explore **affiliation to international organizations** and conclude affiliation to the UNGC and IOGP |
Capital allocation and financing

Mechanisms will be put in place to secure and protect the ESG budget and investment regulations will be updated to internalize the impact of GHG emissions.

Remex identifies a relevant opportunity to develop and adopt investment policies that actively recognize the impact of emissions on its operations and mitigate future risks, such as the adoption of an internal carbon price. The company seeks to capitalize on low-carbon business opportunities, taking advantage of the potential for sustainable growth.

There is a huge opportunity to integrate a holistic view of ESG throughout the budgeting process. Although ESG budgets have been susceptible to reallocations, there is an opportunity to prioritize resource allocation and to secure ESG funding. Key opportunity to develop innovative and dedicated financing mechanisms.

Define an internal carbon price and its scope.

Update investment policies.

Implementation, monitoring, and adjustment of investments internal regulation.

Create a clear classification for ESG expenses and investments.

Prioritize maintenance and rehabilitation with ESG impact and define non-relocatable budget items.

Identify sources of funding while meeting financial targets.
Governance for sustainability

A commitment for production management will support the minimization of routine gas flaring and fugitive emissions.

Organizational capabilities will be strengthened for the correct execution of the sustainability strategy.

Align production growth with the availability of infrastructure for transportation and processing

Growing hydrocarbon production levels have generated pressures on infrastructure and temporary gaps in associated gas transport and processing capacity have been identified that substantially raise the level of GHG emissions through routine gas flaring and fugitive methane emissions.

Actions
- Adapt production development policy.
- Strengthen planning for new developments.
- Strengthen supply and procurement processes.

Opportunity

Capabilities

<table>
<thead>
<tr>
<th>Board of directors</th>
<th>Human capital</th>
<th>Technological tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strengthen human, process, and technological capabilities in ESG</td>
<td>• Develop and improve sustainability knowledge</td>
<td>• Establish robust systems for the efficient collection and monitoring of ESG data, aligned with industry best practices</td>
</tr>
</tbody>
</table>

Gap identification:
- Training and/or hiring.
- Procurement of equipment and software.

Ensure knowledge on ESG topics for correct decision-making.
Data, measurements, and verifications

Pemex will improve the reliability of its GHG emissions inventory and will incorporate a methane emissions monitoring and quantification program.

<table>
<thead>
<tr>
<th>Description</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of systems for flow measurement and characterization in</td>
<td>Evaluate advanced direct and remote methane measurement technologies,</td>
</tr>
<tr>
<td>streams for equipment consumption and venting.</td>
<td>along with a digital repository, to quantify methane emissions at the facility level initially, evolving</td>
</tr>
<tr>
<td>Implementation of campaigns for combustion efficiency measurement in flares.</td>
<td>to the component level over time.</td>
</tr>
</tbody>
</table>

Pemex develops its emissions inventory through an integrated operational data collection system to estimate combustion and flaring emissions by mass balance, complemented by industry generic emission factors for certain vent and fugitive emissions. The reliability of the estimates can be strengthened with greater accuracy of the input data through measurements and definition of emission factors specific to Pemex’s operations. An optimized characterization of emissions will also facilitate the analysis for the identification and implementation of abatement measures.

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of the appropriate measuring system for each type of combustion</td>
<td>Representative sample study of flares in onshore and offshore assets.</td>
</tr>
<tr>
<td>equipment.</td>
<td>Establish/update measurement and quantification protocols.</td>
</tr>
<tr>
<td></td>
<td>Adoption of component-level emission factors and simulation tools.</td>
</tr>
<tr>
<td></td>
<td>Facility-level measurements with complementary methods and spatial scales.</td>
</tr>
<tr>
<td></td>
<td>Development of an advanced analytical system for data storage and analysis.</td>
</tr>
</tbody>
</table>
Communication and engagement

Communication channels will be updated, with reports adhering to recognized standards, and cooperation with international organizations will be expanded.

<table>
<thead>
<tr>
<th>Establishment of appropriate communication channels</th>
<th>Compliance with reporting standards and adherence to associations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revitalize the website, ensuring it is bilingual, intuitive, and constantly updated with the most relevant ESG information. In addition, more accessible digital channels will be implemented, including periodic publications to investors to ensure an effective and transparent communication.</td>
<td>Adoption of additional reporting standards such as the TCFD, the Carbon Disclosure Project (CDP), as well as the International Sustainability Standards Board’s (ISSB), International Financial Reporting Standards (IFRS) S1 by 2024 and IFRS S2 by 2025, thereby strengthening transparency and alignment with global expectations. Seek to actively affiliate to international organizations such as IOGP, to get direct access to best practices and networks in sustainability matters.</td>
</tr>
<tr>
<td>Pemex recognizes the need to improve its ESG communication channels, seeing this as a valuable opportunity to strengthen transparency and accessibility. Updating and modernizing communication platforms will better reflect efforts in sustainability and social responsibility, making them more accessible and understandable to a global audience.</td>
<td>Pemex identifies a significant opportunity to expand the alignment with international reporting standards and the participation in key organizations in the sector. This initiative will allow to access global best practices and actively participate in the international sustainability community, placing the company on par with international competitors.</td>
</tr>
<tr>
<td>Update existing communication channels.</td>
<td>Adoption of additional reporting standards.</td>
</tr>
<tr>
<td>Publication of ESG information in English and Spanish.</td>
<td>Affiliation with international organizations.</td>
</tr>
<tr>
<td>Periodic update of key ESG indicators.</td>
<td>Develop internal capabilities to meet standards.</td>
</tr>
</tbody>
</table>
7. Disclosure and updating commitments

**Current situation and measurements**
- Strengthen diagnostics and assessment of measurable indicators

**Standards**
- Disclosure of the management of sustainability topics aligned with recognized disclosure standards (GRI, IFRS), considering the adherence to IOGP and UNGC, and, aligned with the TCFD recommendations, ISSB’s IFRS S1 for 2024 and IFRS S2 for 2025

**Continuous improvement**
- Proactive mindset towards continuous optimization of operations
- Foster an organizational culture that values continuous learning and adaptability, enabling the company to meet changing market challenges and regulatory demands

**Performance tracking**
- Annual progress report
- Regular updates culminating in the publication of results
Annexes

Annex 01 Goals and ambitions

GOALS BY 2030

**Environment**

- From 2024, achieve at least a 98% in gas utilization in E&P
- Reduce GHG emissions intensity (Scope 1): 61% in E&P, 40% in refineries, and 60% in gas processing*
- Achieve a reduction of 30% in methane emissions**
- Zero routine gas flaring in E&P

**Non-GHG emissions**

- Reduce SOx emissions in gas processing centers by 90%*

**Biodiversity**

- Reach at least two thousand hectares of protected natural areas

**Water and soil**

- Reduce water use index in downstream operations: 39% in refineries, 42% in gas processing centers and 76% in ethane derivatives, 50% in methanol and aromatic, 9% in ammonia, production*
- Double the level of reuse of water in refineries (56.4 MMm³)*
- Remediate at least 361 hectares of environmental liabilities (2024-2030 horizon)

AMBITION BY 2050

**Net-zero emissions (Scopes 1 and 2) by 2050**

* Compared to 2021 baseline.
** Reduction measured in methane emissions intensity by business line, compared to 2020 baseline.
GOALS BY 2030

Social
Industrial safety
- Improve the Frequency Index to 0.21
- Reduce the frequency rate of process safety events to 1.3
- Zero fatalities
- Zero findings of SSPA System non-conformances
- 100% Attention to Type A audit findings*
- 100% Attention to Type A risks*

Occupational health
- Ensure 100% control of exposure to biological, physical and/or chemical agents

Relationship with communities / management of the surroundings
Access to health services:
- Benefit at least 800,000 people, more than 50% of whom be women
Educational Development:
- Improve at least 700 public schools
Productivity of small producers:
- Expand coverage to agrarian nuclei, cooperatives, ejidos and/or communities in all priority states
Support local governments to strengthen public services:
- Benefit at least 16 state governments and 30 municipal governments
Reliable and quality infrastructure:
- Achieve at least 10% of actions aimed at the infrastructure axis
Recovery of public spaces:
- Impact at least 130 public spaces

*With respect to immediate previous year.

Governance
Culture of compliance
- Achieve at least 90% compliance with the comprehensive training program for Pemex Cumple

Anticorruption
- Ensure due diligence application of at least 90% to third parties
Annex 02  Description of decarbonization lines of action

Actions to reduce gas flaring in E&P and gas processing segments will continue to be implemented in the medium term.

**DECARBONIZATION LINES OF ACTION**

**Routine flaring reduction in E&P and gas processing centers, and commitment to zero routine flaring in new fields development**

- Abatement: >15 MMtCO₂/year
- CAPEX (US$M): 2,000-3,000
- Annual OPEX (US$M): 75-125

Construction of infrastructure required for gas use or disposal to avoid flaring.

<table>
<thead>
<tr>
<th>Results by 2030</th>
<th>Main impacted assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatement: &gt;15 MMtCO₂/year</td>
<td>RMNE, APB3, APV</td>
</tr>
<tr>
<td>CAPEX (US$M): 2,000-3,000</td>
<td>New Developments</td>
</tr>
<tr>
<td>Annual OPEX (US$M): 75-125</td>
<td>Gas Processing Centers</td>
</tr>
</tbody>
</table>

**Main initiatives**

1. **Closure of mature wells with high GOR**
   - Expand current program to prevent gas flaring

2. **Reinjection of wet sour gas**
   - Avoid flaring of unusable gas due to high nitrogen content
   - Maximise Ku-Maloob-Zaap reinjection capacity utilization

3. **Infrastructure development**
   - Construction and commissioning of gas processing and transportation infrastructure to take advantage of the production of new fields
   - Residual gas compression in gas processing centers (implemented)
   - Prevent acid gas flaring in gas processing centers
Efficient cogeneration projects, in addition to generating economic benefits, will result in significant reductions in direct emissions.

**DECARBONIZATION LINES OF ACTION**

Efficient cogeneration projects\(^1,2\)

<table>
<thead>
<tr>
<th>Results by 2030</th>
<th>Main impacted assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatement: &lt;5 MMtCO(_2)/year</td>
<td>CPG – Cactus</td>
</tr>
<tr>
<td>CAPEX (US$M): 0</td>
<td>CPQ – Cangrejera and Morelos</td>
</tr>
<tr>
<td>Annual OPEX (US$M): 700-730</td>
<td>Refineries – Salina Cruz, Cadereyta, Madero, Tula and Minatitlán</td>
</tr>
</tbody>
</table>

Simultaneous generation of steam and electric power.

1 Assumes purchase of steam and energy for own consumption as Scope 2 and surplus of electrical energy for sale as Scope 3. Conservative abatement estimate based on projects and capabilities included in the Business Plan.

2 Assumes that the investment is made through service contracts where CFE or a private partner invests to provide cogeneration services to Pemex.

3 OPEX includes modifications and infrastructure required within the work centers to receive electricity and steam.

Source: S&P Global Commodity Insights, with data from Pemex.
There is a high potential for abatement of fugitive methane emissions which initially need to be identified and quantified more accurately.

**Detection, quantification, and elimination of methane emissions**

1. **Abatement**: 55 MMtCO₂e/year
2. **CAPEX / OPEX (US$M)**: 170-200

- **All segments** (detection and repair programs)
- **PEP – APBJ & APCP** (flare replacement)

Detection and measurement of methane leaks for timely repair or improvement in combustion efficiencies.

**Main initiatives**

<table>
<thead>
<tr>
<th>Main initiatives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compressors rehabilitation</strong></td>
<td>• Replacing wet seals with dry seals</td>
</tr>
<tr>
<td><strong>Methane Leak Detection and Repair (LDAR) – Incremental program</strong></td>
<td>• Expansion of the current methane leak detection program to incorporate annual flyovers and daily satellite monitoring</td>
</tr>
<tr>
<td><strong>Improved flare combustion efficiency</strong></td>
<td>• Minimize unburned methane released into the atmosphere</td>
</tr>
</tbody>
</table>

1. An initial abatement potential is estimated based on company's current emissions inventory, which likely underestimates actual fugitive emissions values, in line with findings in industry studies across all types of oil and gas operators.
2. For Pemex Logística, it is estimated that up to 10,940 tCO₂e/year could be eliminated in the most aggressive scenario of elimination of methane fugitives.

Source: S&P Global Commodity Insights, with information from Pemex.
To reduce vents, take advantage of CO₂ streams available in gas processing centers and petrochemical complexes, as well as the lower-cost green hydrogen opportunity in the US.

Capture and storage to prevent direct venting of CO₂ process streams to the atmosphere.

**DECARBONIZATION LINES OF ACTION**

<table>
<thead>
<tr>
<th>Main initiatives</th>
<th>Descripción</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Carbon capture in ammonia production process</td>
<td>• Capture and storage of the CO₂ stream from ammonia production plants</td>
</tr>
<tr>
<td>2 Carbon capture in sulphur recovery plants</td>
<td>• Recovery of high CO₂ purity stream</td>
</tr>
<tr>
<td>3 Hydrogen supply alternatives</td>
<td>• Substitution of natural gas reforming hydrogen with green hydrogen via pipeline from Texas to Cadereyta refinery</td>
</tr>
</tbody>
</table>

**Reduction of CO₂ and CH₄ vents to the atmosphere**

<table>
<thead>
<tr>
<th>Results by 2030</th>
<th>Main impacted assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatement: &lt;5 MMtCO₂e/year</td>
<td>• CPG – Cactus, Nuevo Pemex, Ciudad Pemex</td>
</tr>
<tr>
<td>CAPEX (US$M): 400-420</td>
<td>• CPQ – Cosoleacaque</td>
</tr>
<tr>
<td>Annual OPEX (US$M): 100-150</td>
<td>• Refinery – Cadereyta</td>
</tr>
</tbody>
</table>

Source: S&P Global Commodity Insights, with information from Pemex.
Energy efficiency projects initially identified will be extended to more assets and complemented by more initiatives as utilization increases.

**Energy efficiency and combustion emissions reduction in refineries and petrochemicals complexes**

- **Abatement:** ≤2 MMTCO₂/year
- **CAPEX (US$M):** 350-400
- **Annual OPEX (US$M):** 0

**Main initiatives**

1. **Substitution of fuel oil with NG and LPG**
   - Description: Replace burners in heaters and boilers to replace fuel oil

2. **Rehabilitations and maintenance**
   - Description: Rehabilitate flue gas chillers and pumps
   - Install air preheaters on direct fire heaters
   - Rehabilitate and maintain ethylene lines to improve utilization and use energy from heaters and boilers
   - Repair initiatives to increase efficiency

3. **Increased combustion efficiency**
   - Description: Install preheaters on direct fired burners
   - Heat recovery from flue gases

**Results by 2030**

- **Low Feasibility**
- **High Feasibility**

- **Low Impact**
- **High Impact**

**Main impacted assets**

- **Refineries** – Salina Cruz, Tula, Madero, Cadereyta, Minatitlán
- **CPG** – Cangrejera, Morelos

Source: S&P Global Commodity Insights, with information from Pemex.
In refining, given the lower potential of routine flaring reduction, it would begin with low-cost and easy-to-implement initiatives.

### DECARBONIZATION LINES OF ACTION

#### Routine flaring reduction in refining

<table>
<thead>
<tr>
<th>Results by 2030</th>
<th>Main impacted assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatement: &gt;5 MMtCO₂e/year</td>
<td>Refineries – Minatitlán, Tula, Salina Cruz, Madero and Cadereyta</td>
</tr>
<tr>
<td>CAPEX (US$M): 30-50</td>
<td></td>
</tr>
<tr>
<td>Annual OPEX (US$M): 0</td>
<td></td>
</tr>
</tbody>
</table>

Reduce routine flares by replacing or rehabilitating equipment and by restituting equipment contemplated in the original plants design.

<table>
<thead>
<tr>
<th>Main initiatives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equipment replacement</td>
</tr>
<tr>
<td>2</td>
<td>Rehabilitation and maintenance of existing equipment</td>
</tr>
<tr>
<td>3</td>
<td>Reduction of routine flaring in refineries</td>
</tr>
</tbody>
</table>

- Equipment replacement: Replacement of compressors to improve gas recovery and prevent flaring
- Rehabilitation and maintenance of equipment, compressors, fractionators, and venting systems
- Actions to reach reference levels in emissions intensity from routine flaring by 2030 (Salina Cruz, ~5tCO₂e/Mb)

Source: S&P Global Commodity Insights, with information from Pemex.
Reaching near-zero methane emissions requires additional actions both to leak detection and repair programs and to reduce routine venting and flaring.

**DECARBONIZATION LINES OF ACTION**

### Complementary initiatives

**Fugitive abatement:** $< 5 \text{ MMtCO}_2e/\text{year}$

**Vent abatement:** $< 5 \text{ MMtCO}_2e/\text{year}$

**Abatement aligned to routine zero-flare:** $> 20 \text{ MMtCO}_2e/\text{year}$

Complementary initiatives to meet methane emission reduction commitments (such as elimination of routine flaring and reaching a 0.2% methane intensity target).

### Results by 2030

- **High Feasibility**
- **High Impact**

**Main initiatives**

1. **Almost complete elimination of fugitives**
   - Increase the frequency of LDAR programs for early leak detection
   - Electrification of gas-operated equipment and replacement of those prone to leaks
   - Extend the flaring combustion efficiency improvement program to the rest of assets

2. **Additional elimination of methane vents**
   - Gas capture with VRUs
   - Adherence to maintenance schedules (preventive and predictive) to minimize venting

3. **Elimination of routine flaring**
   - Investment in infrastructure for gas utilization and modernization of equipment
   - Implementation of incentives to increase gas utilization

Source: S&P Global Commodity Insights, with information from Pemex.
Electrification, CCS and green hydrogen initiatives generate impacts and require infrastructure, technology and public policy support.

### DECARBONIZATION LINES OF ACTION

<table>
<thead>
<tr>
<th>Main Initiatives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS in CO₂ streams in Minatitlán and Dos Bocas</td>
<td>• High-purity CO₂ stream capture and storage in depleted oil and gas fields</td>
</tr>
<tr>
<td>Domestic production of low-carbon hydrogen</td>
<td>• Production of green hydrogen in refineries and with electricity supply contracts from wind energy</td>
</tr>
<tr>
<td>Electrification in E&amp;P and gas processing</td>
<td>• Compressor electrification to reduce stationary fuel combustion</td>
</tr>
<tr>
<td></td>
<td>• Microgrids construction to electrify onshore E&amp;P operations, once cogeneration projects come online</td>
</tr>
</tbody>
</table>

### Long-term initiatives

<table>
<thead>
<tr>
<th>Expected abatement (MMtCO₂/year)</th>
<th>Potential assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture abatement potential with CCS initiatives, green hydrogen domestic production, and equipment electrification that could be feasible after 2030.</td>
<td>• Refineries – Minatitlán, Dos Bocas</td>
</tr>
<tr>
<td></td>
<td>• PEP – Onshore Assets</td>
</tr>
<tr>
<td></td>
<td>• Gas Processing Centers</td>
</tr>
</tbody>
</table>

Initiatives for long-term implementation.

Source: S&P Global Commodity Insights, with information from Pemex.
Pemex Deer Park refinery (not included in Mexico’s NDC-aligned goals) presents high-impact abatement possibilities to be evaluated.

**DECARBONIZATION LINES OF ACTION**

**Energy efficiency, electrification, renewable diesel, and CCS in Deer Park**

**Start year: 2026+**

**Main initiatives**

- **Energy intensity**
  - Maintain advanced energy intensity levels with respect to the remaining refining segment in Pemex

- **Low-carbon opportunities under evaluation**
  - Renewable diesel
  - Electrification and renewable electricity generation
  - Carbon capture and storage
  - Blue/green hydrogen

**Main impacted assets**

- **Refinery** - Deer Park / PMI

**Abatement**: 20% of net GHG emissions by 2030 and 35% by 2035 (2022 baseline)

**Abatement cost (US$/t)**: 5 - 1,600

**CAPEX (US$M)**: 100-1,000

**Annual OPEX (US$M)**: would apply in cases of third-party development or in joint ventures

Development of an efficient initiative portfolio that considers the cost of abatement compared to alternatives in Mexico and the possibility of joint development.

Some opportunities could materialize in collaboration with large-scale projects in the Houston industrial zone (e.g., CCS and access to low-carbon hydrogen)

Required investments will be evaluated against other options in Pemex’s portfolio with lower abatement costs
## Annex 03 Prospective production scenarios

<table>
<thead>
<tr>
<th>Business line</th>
<th>Variable</th>
<th>Scenario</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>2028</th>
<th>2029</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>E&amp;P</td>
<td>Hydrocarbon production, MMboe</td>
<td>Base</td>
<td>986</td>
<td>1,029</td>
<td>1,061</td>
<td>1,063</td>
<td>1,106</td>
<td>1,188</td>
<td>1,335</td>
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<tr>
<td></td>
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<td>Minimum</td>
<td>998</td>
<td>1,007</td>
<td>1,014</td>
<td>1,041</td>
<td>1,110</td>
<td>1,129</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Refining</td>
<td>Crude processing, Mbd</td>
<td>Base</td>
<td>1,342</td>
<td>1,386</td>
<td>1,396</td>
<td>1,397</td>
<td>1,375</td>
<td>1,369</td>
<td>1,412</td>
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<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>1,248</td>
<td>1,291</td>
<td>1,292</td>
<td>1,268</td>
<td>1,261</td>
<td>1,261</td>
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</tr>
<tr>
<td>Gas processing</td>
<td>Gas processing, MMcfd</td>
<td>Base</td>
<td>3,024</td>
<td>3,439</td>
<td>3,562</td>
<td>3,201</td>
<td>3,221</td>
<td>3,497</td>
<td>3,898</td>
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<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>3,386</td>
<td>3,538</td>
<td>3,342</td>
<td>3,296</td>
<td>3,440</td>
<td>3,638</td>
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</tr>
<tr>
<td>Petrochemicals</td>
<td>Ethane derivative production, Mt</td>
<td>Base</td>
<td>1,227</td>
<td>1,475</td>
<td>1,632</td>
<td>1,544</td>
<td>1,579</td>
<td>1,705</td>
<td>1,689</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>708</td>
<td>709</td>
<td>708</td>
<td>711</td>
<td>708</td>
<td>708</td>
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<tr>
<td></td>
<td>Ammonia production, Mt</td>
<td>Base</td>
<td>1,200</td>
<td>1,425</td>
<td>1,452</td>
<td>1,397</td>
<td>1,401</td>
<td>1,452</td>
<td>1,397</td>
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<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>699</td>
<td>726</td>
<td>699</td>
<td>701</td>
<td>726</td>
<td>699</td>
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</tr>
<tr>
<td></td>
<td>Methanol and aromatics production, Mt</td>
<td>Base and minimum</td>
<td>309</td>
<td>231</td>
<td>231</td>
<td>231</td>
<td>231</td>
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</tbody>
</table>

Source: 2024: POFAT (approved by Agreement CA-122/2023); 2025-2030: Planning Cycle 2022-2023: Base Scenario that corresponds to the Escenario Indicativo Consolidado de la Meta de Balance Financiero 2025-2029 (approved by Agreement CA-073/2023) and Minimum Scenario.

Hydrocarbon production: includes Pemex production, does not include partners and third-party production; ethane derivatives production: Gross derivative production (ethylene, ethylene oxide, glycols, polyethylene, and others that do not include CO₂, H₂, N₂, and O₂); Methanol and aromatic production: includes heptane, hexane, DC₅, pentanes and petrochemical specialties (La Cangrejera and Independencia petrochemical complexes net production).
## Glossary

### Glossary of terms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>APBJ</td>
<td>Bellota-Jujo Production Asset</td>
</tr>
<tr>
<td>APCP</td>
<td>Cinco Presidentes Production Asset</td>
</tr>
<tr>
<td>AVP</td>
<td>Veracruz Production Asset</td>
</tr>
<tr>
<td>ESG</td>
<td>Environmental, Social and Governance</td>
</tr>
<tr>
<td>CCS</td>
<td>Carbon Capture and Storage</td>
</tr>
<tr>
<td>CAPEX</td>
<td>Capital Expenditure</td>
</tr>
<tr>
<td>CAR</td>
<td>Climate Action Reserve</td>
</tr>
<tr>
<td>CNH</td>
<td>National Hydrocarbons Commission</td>
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<tr>
<td>CPG</td>
<td>Gas Processing Center</td>
</tr>
<tr>
<td>CPQ</td>
<td>Petrochemical Complex</td>
</tr>
<tr>
<td>E&amp;P</td>
<td>Exploration &amp; Production</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse Gases</td>
</tr>
<tr>
<td>GFANZ</td>
<td>Glasgow Finance Alliance for Net Zero</td>
</tr>
<tr>
<td>GRI</td>
<td>Global Reporting Initiative</td>
</tr>
<tr>
<td>IOGP</td>
<td>International Association of Oil and Gas Producers</td>
</tr>
<tr>
<td>KMZ</td>
<td>Ku Mâloob Zaap</td>
</tr>
<tr>
<td>OCGI</td>
<td>Oil and Gas Climate Initiative</td>
</tr>
<tr>
<td>OPEX</td>
<td>Operating Expenses</td>
</tr>
<tr>
<td>PACMA</td>
<td>Community and Environment Support Program</td>
</tr>
<tr>
<td>POFAT</td>
<td>Annual Operating and Financial Program</td>
</tr>
<tr>
<td>GOR</td>
<td>Gas-to-oil ratio</td>
</tr>
<tr>
<td>NMR</td>
<td>Northeast Marine Region</td>
</tr>
<tr>
<td>SAF</td>
<td>Sustainable Aviation Fuel</td>
</tr>
<tr>
<td>SSPA</td>
<td>Pemex Safety, Health, and Environmental Protection System</td>
</tr>
<tr>
<td>TCFD</td>
<td>Task Force on Climate Related Financial Disclosure</td>
</tr>
<tr>
<td>UNGC</td>
<td>United Nations Global Compact</td>
</tr>
</tbody>
</table>
## Glossary of units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>kgCO&lt;sub&gt;2&lt;/sub&gt;e/boe</td>
<td>Kilograms of carbon dioxide equivalent emissions per barrel of crude oil equivalent</td>
</tr>
<tr>
<td>Mboe</td>
<td>Thousand barrels of crude oil equivalent</td>
</tr>
<tr>
<td>Mb/d</td>
<td>Thousand barrels per day</td>
</tr>
<tr>
<td>MMcf</td>
<td>Million cubic feet</td>
</tr>
<tr>
<td>MMcf/d</td>
<td>Million cubic feet per day</td>
</tr>
<tr>
<td>MMtoe</td>
<td>Million tonnes of oil equivalent</td>
</tr>
<tr>
<td>t&lt;sup&gt;CO&lt;/sup&gt;&lt;sub&gt;2&lt;/sub&gt;e</td>
<td>Tonnes of carbon dioxide equivalent emissions</td>
</tr>
<tr>
<td>t&lt;sup&gt;CO&lt;/sup&gt;&lt;sub&gt;2&lt;/sub&gt;e/ Mb</td>
<td>Tonnes of carbon dioxide equivalent emissions per thousand barrels</td>
</tr>
<tr>
<td>t&lt;sup&gt;CO&lt;/sup&gt;&lt;sub&gt;2&lt;/sub&gt;e/ Mboe</td>
<td>Tonnes of carbon dioxide equivalent emissions per thousand barrels of crude oil equivalent</td>
</tr>
<tr>
<td>t&lt;sup&gt;CO&lt;/sup&gt;&lt;sub&gt;2&lt;/sub&gt;e/ MMcf</td>
<td>Tonnes of carbon dioxide equivalent emissions per million cubic feet</td>
</tr>
<tr>
<td>US$</td>
<td>U.S. Dollars</td>
</tr>
<tr>
<td>US$M</td>
<td>Million U.S. Dollars</td>
</tr>
<tr>
<td>US$/t&lt;sup&gt;CO&lt;/sub&gt; &lt;sub&gt;2&lt;/sub&gt;e</td>
<td>US dollars per tonne of carbon dioxide equivalent emissions</td>
</tr>
</tbody>
</table>