CLIMATE AMBITION SCENARIO FOR MEXICO: INSIGHTS AND POLICY IMPLICATIONS

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CLIMATE POLICY LAB

This analysis by Iniciativa Climática de México and Climate Policy Lab employs the Energy Policy Simulator (EPS) model to evaluate Mexico's climate policies and their impact across economic sectors. The study examines the effectiveness of national policies in achieving Mexico's updated Nationally Determined Contributions (NDCs).

Key Messages

- The Climate Ambition Scenario (CAS), a mix of financial incentives and regulation policies, reduces total GHG emissions by 77.1% compared to Business-as-Usual (BAU) in 2050.
- Those emission reductions of the CAS are achieved while simultaneously increasing GDP growth, creating more jobs, and reducing national debt.
- Additionally, air quality improvements under the CAS are estimated to save over 39k lives by 2050, highlighting the significant health benefits of decarbonizing Mexico's economy.
- CAS policies are not sufficient to meet Mexico's 2030 NDC targets. Additional policies would be necessary to meet either the unconditional or conditional NDC targets.

Methodology

Using the EPS model, this analysis evaluates two scenarios: the Business-as-Usual (BAU) scenario, which reflects Mexico's current policies, and the Climate Ambition Scenario (CAS), which strengthens existing policies and introduces new regulations. The model projects emissions reductions and assesses their economic implications. The goal is to provide decision-makers with low-carbon policy options that both support both Mexico's climate targets and provide socioeconomic benefits.

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Results

GREENHOUSE GAS EMISSIONS

The CAS policy package reduces emissions, including land-use sources, by 17.3% in 2030 compared to BAU (**Figure 1**). However, CAS policies do not meet Mexico's 2030 unconditional NDC target of 35% or its conditional NDC target of 40%. Nevertheless, by 2050, the CAS leads to a 77.1% reduction in total emissions (66.9% excluding LULUCF). The electricity sector is the biggest contributor to these reductions, followed by land use, while transportation, industry, and agriculture show slower progress (**Figure 2**). To meet Mexico's climate commitments, more stringent policies and actions are necessary.

ELECTRICITY GENERATION

The CAS policy scenario changes the evolution of electricity generation in Mexico over the next 25 years (**Figure 3).** By 2030, Mexico is expected to reach its 45% renewable energy target, driven by strong growth in solar PV (31%) and wind (16%) under the CAS scenario. Assuming 60% of solar PV is installed on rooftops, over 1.75 million homes would provide families living in poverty with access to clean energy and reduce the cost of electricity. No new natural gas is installed after 2030, and thus capacity generation declines by 94% by 2050. Fossil fuel generation from coal and heavy fuel oil is phased out by 2030, highlighting Mexico's accelerated shift towards a low-carbon energy matrix.

Figure 1. Total Greenhouse Gas Emissions (Mt CO2e)

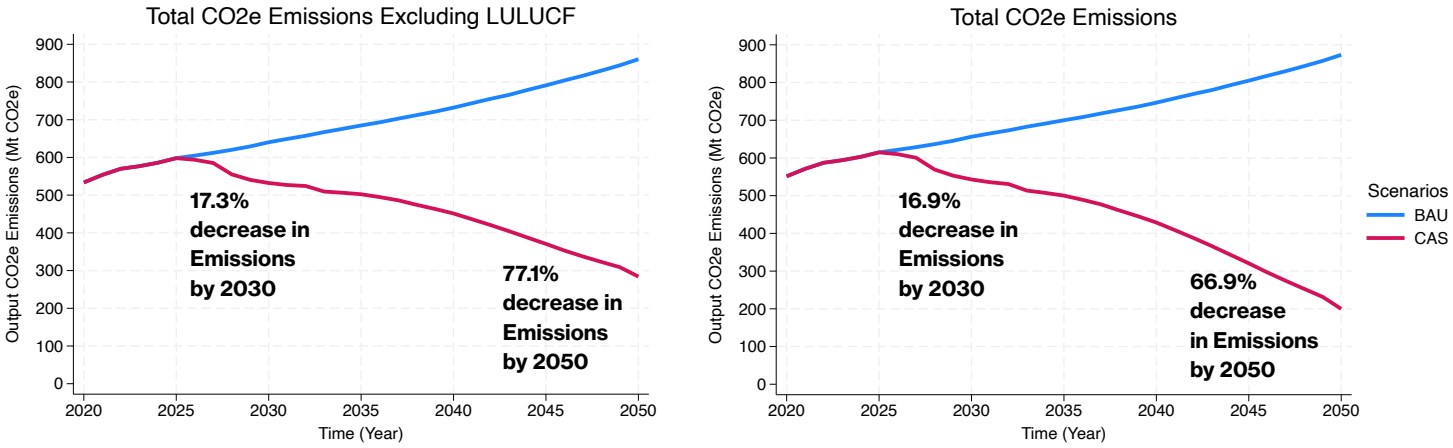


Figure 2. Total Greenhouse Gas Emissions by Sector (Mt CO2e)

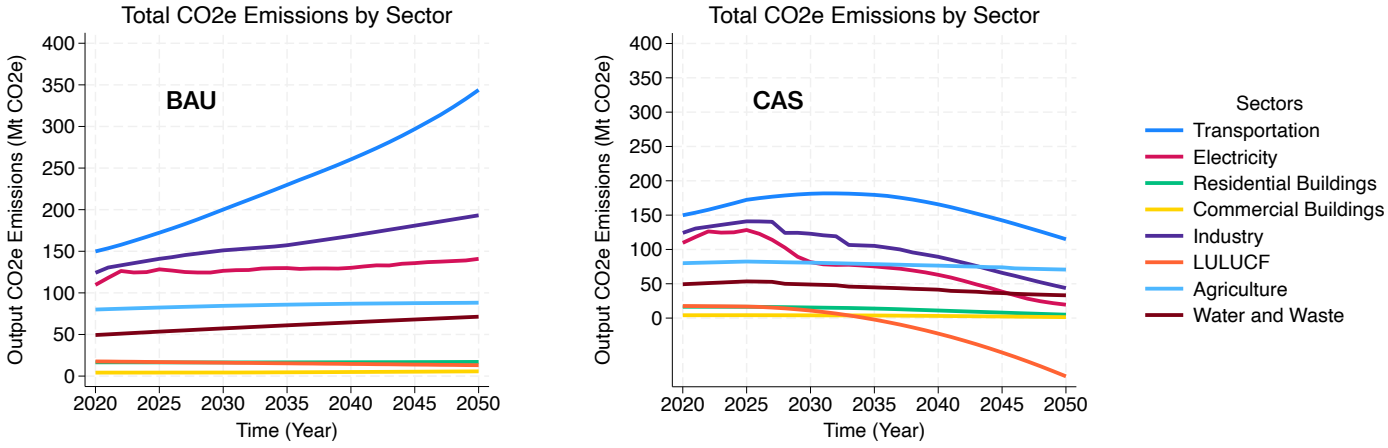
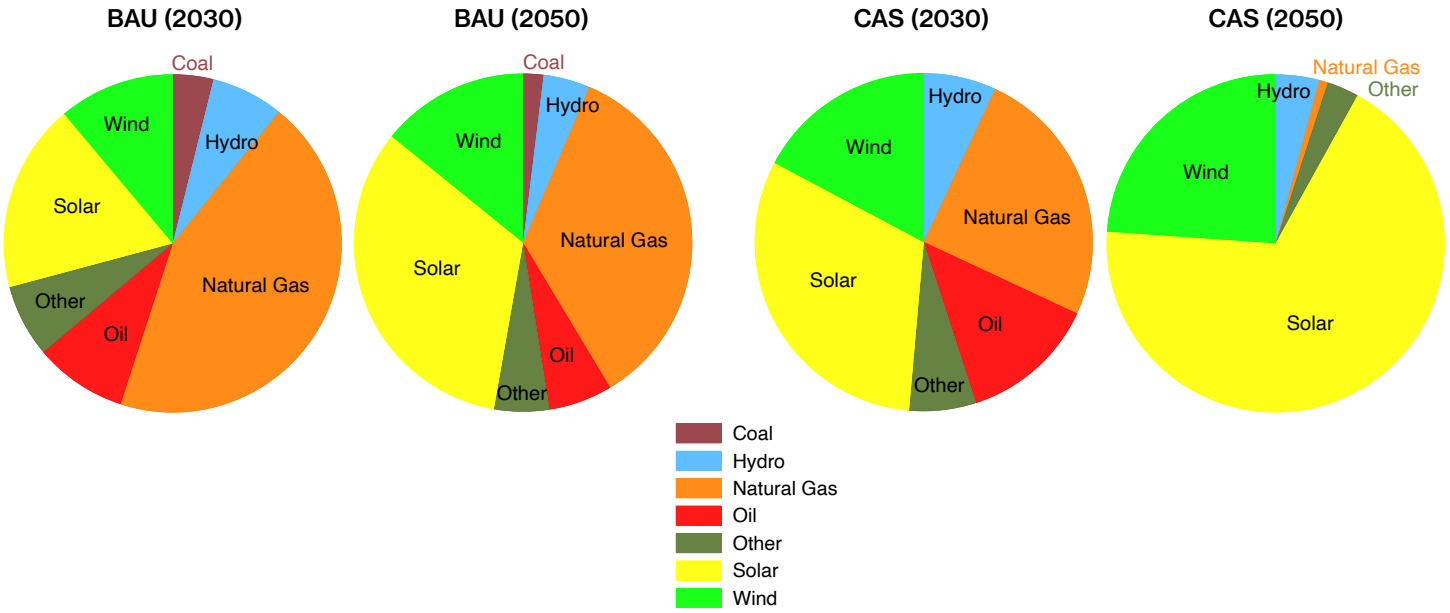


Figure 3. Electricity Generation (GWh)



TRANSPORTATION

The analysis of transportation fuel use in 2020 shows heavy reliance on petroleum products, with limited use of renewable sources (**Figure 4**). The results indicate a gradual shift towards alternative fuels under both the BAU and CAS scenarios. Passenger transport demand is expected to grow steadily under the CAS scenario, while freight demand will increase robustly (**Figure 5**). This highlights the need for sustainable transport policies to effectively manage future energy use and emissions through stringent regulations for Light Duty Vehicles (LDVs) and Heavy Duty Vehicles (HDVs), and by prioritizing accessible, low-carbon, and well connected public transport.

Figure 4. Transportation Fuel Use (BTU)

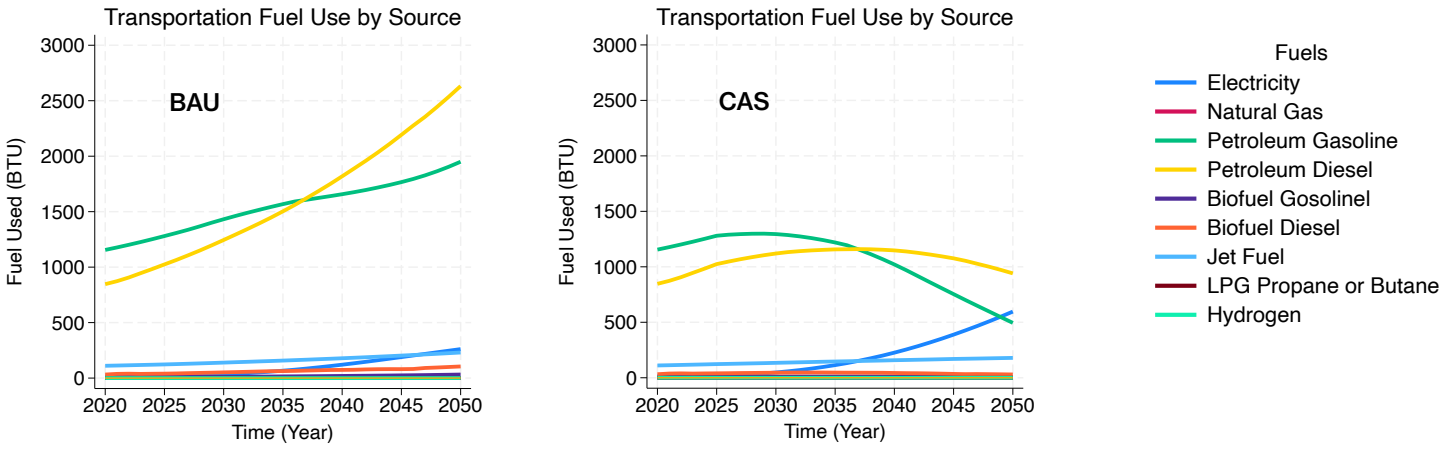


Figure 5. Travel Demand

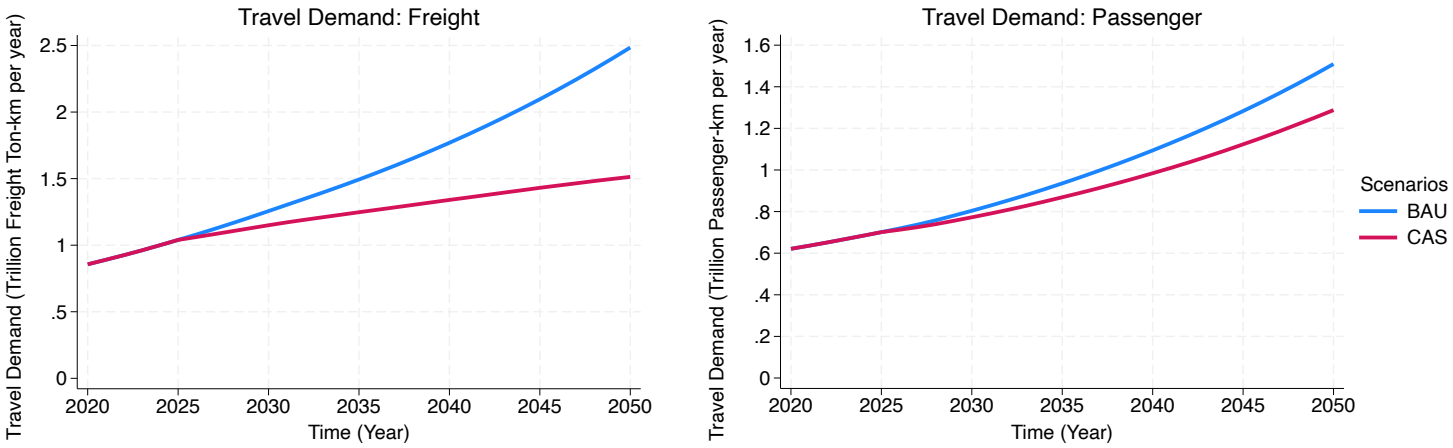
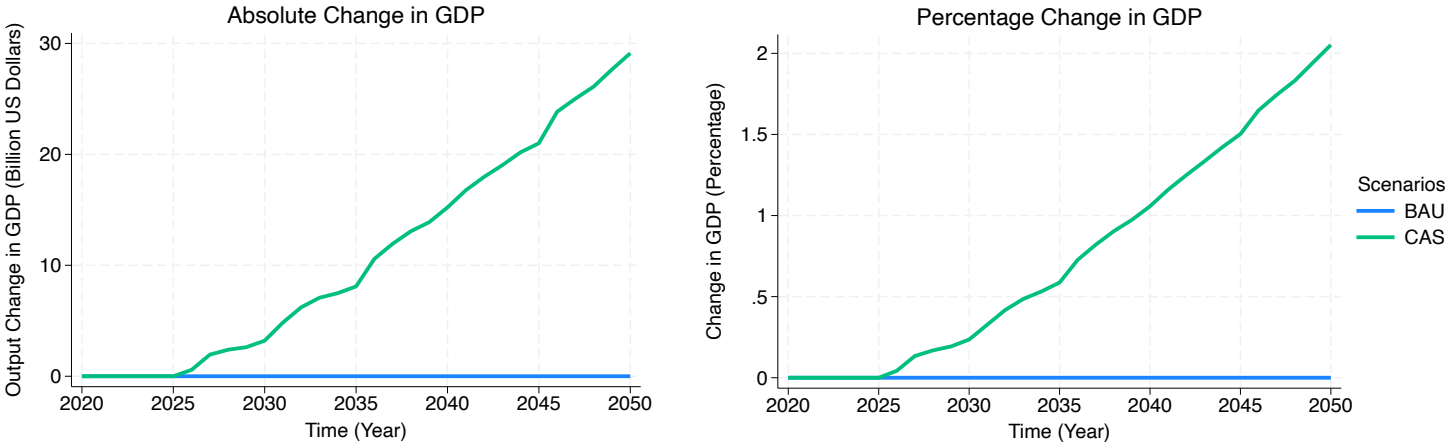


Figure 6. Change in Gross Domestic Product (Billion US Dollars)



ECONOMIC IMPACTS – JOBS AND GDP

The CAS is projected to boost Mexico's GDP from approximately $574 million in 2026 to $32.41 billion by 2050, driven by carbon pricing, renewable energy initiatives, and the transition to electric vehicles (**Figure 6**). Employment will also grow significantly, from 11,238 jobs in 2026 to 1.33 million by 2050 (**Figure 7**). While job losses occur in sectors like fossil fuels, new opportunities arise in green industries such as sustainable agriculture and renewable energy, resulting in a large net employment gain. The CAS scenario reduces Mexico's national debt by $107.9 billion by 2050, improving fiscal health and enabling future investments in climate solutions (**Figure 8**).

Figure 7. Change in Jobs (Number of Jobs)

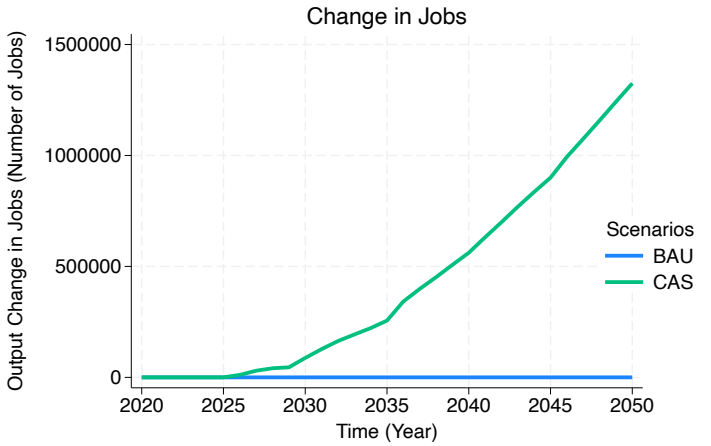


Figure 8. Change in National Debt (Billion US Dollars)

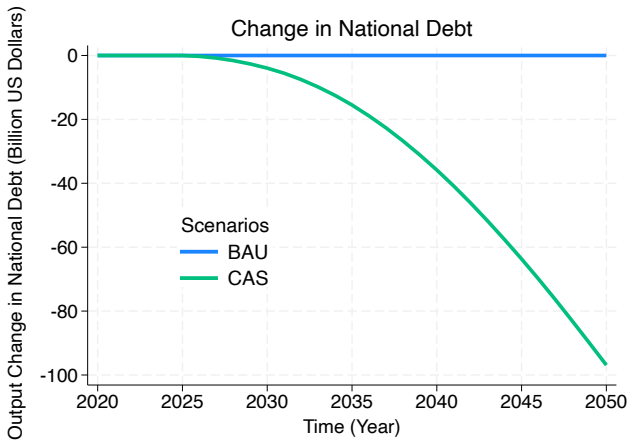


Figure 9. Change in Government Cash Flow by Entity (US Dollars)

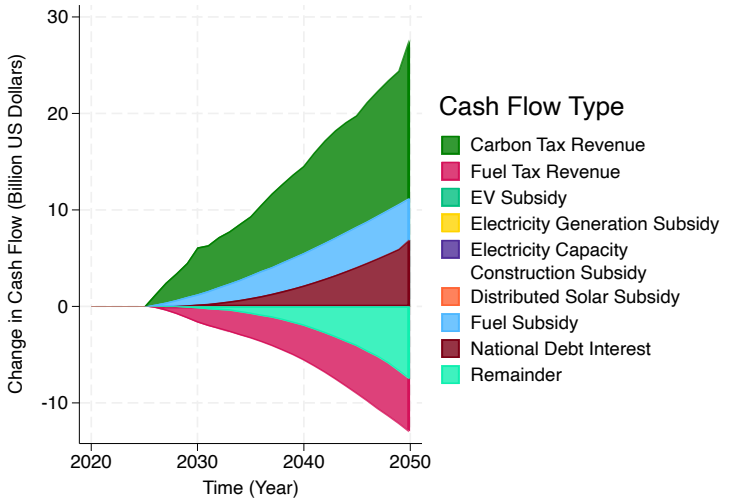
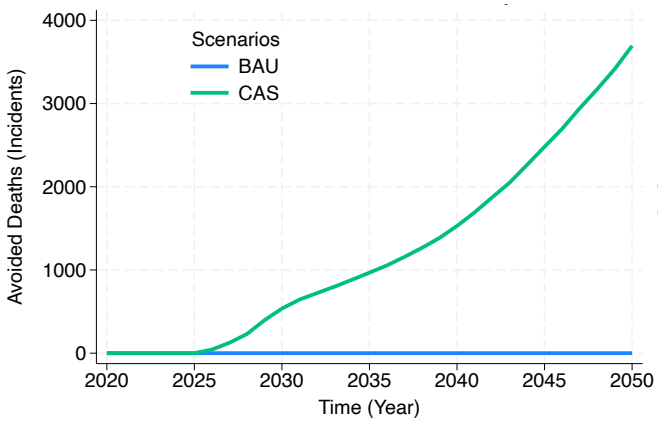


Figure 10. Avoided Deaths (Number of Deaths)



In addition to lower national debt, the government's cash flows improve due to increased carbon tax revenue, decreased expenditures on fuel subsidies, and reduced interest payments on the national debt (**Figure 9**). In 2030, carbon tax revenue is projected at $6.12 billion, and savings of interest payments on national debt will be approximately $203 billion. By 2050, carbon tax revenue is expected to rise to $27.7 billion, and interest payment savings will increase to $6.91 billion. The increases in these two cash flows offset a decline in fuel tax revenues that occurs as Mexico transitions away from fossil fuels. Overall, the CAS policies improve the government's fiscal health and offer the opportunity to make climate-intelligent investments both for mitigation and adaptation efforts.

HEALTH BENEFITS

The health benefits of the CAS are substantial, with an estimated 39,333 premature deaths avoided by 2050 due to improved air quality and healthier environments (**Figure 10**). These benefits highlight the importance of climate policies that protect public health.

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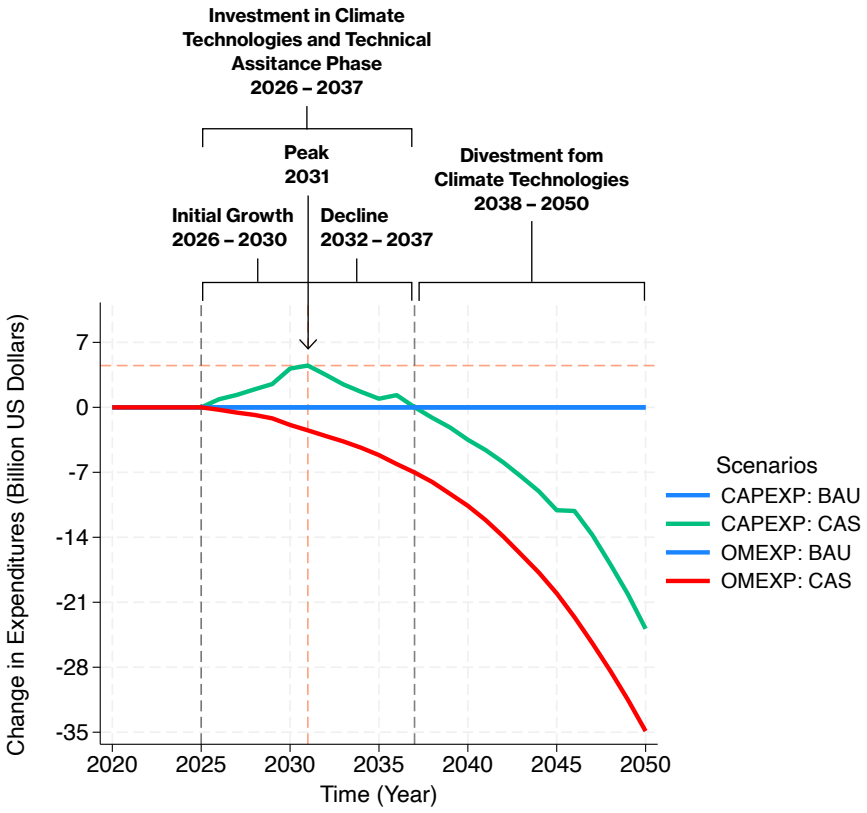
Figure 11. Cost of Implementation (Billion US Dollars)



COST AND SAVINGS

The cost of implementation is determined by analyzing capital expenditures along with operations and management costs (**Figure 11**). The analysis of capital expenditures indicates a significant increase in investments from the public and private sectors under the CAS scenario, with total changes reaching $4 billion in 2030 and peaking at $5 billion in 2031. However, this is followed by a decline, with reductions in capital expenditures projected to reach about $27 billion by 2050. In terms of operations and maintenance expenditures, the CAS scenario shows an initial cost reduction, with total changes projected at $2 billion by 2030, continuing to decrease to $34 billion by 2050. While the policy package involves upfront investments, it is anticipated to significant savings over time, with change in socioeconomic and health benefits valued at $4 billion by 2030 by 2030 and $54 billion by 2050. Additionally, changes in household savings are projected to reach $819 million in 2030 and $14 billion in 2050. Overall, the total change in savings is estimated at $13 billion in 2030 and $119 billion in 2050 (**Figure 12**).

FOR ACADEMIC CITATION:

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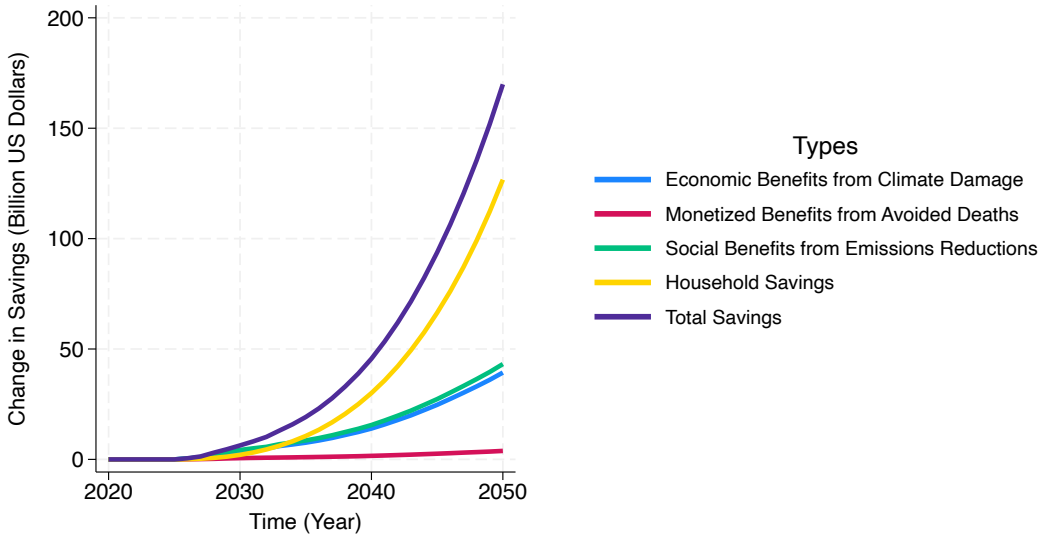
Figure 12. Savings from Implementation (Billion US Dollars)



Policy Recommendations to Achieve Mexico's Updated NDC

Mexico has numerous opportunities to accelerate its energy transition and make progress towards its updated NDC goals. The following recommendations are just one set of policy options among many possible pathways to decarbonization.

- Implement sector-specific strategies focused on transitioning to clean energy and improving energy efficiency.
- Invest in renewable energy, green infrastructure, and energy efficiency to drive sustainable economic growth.
- Develop policies to foster green job creation and support workers transitioning from fossil fuel industries.
- Strengthen carbon pricing mechanisms and consider fuel subsidy reforms to enhance government revenues and reduce reliance on fossil fuels.