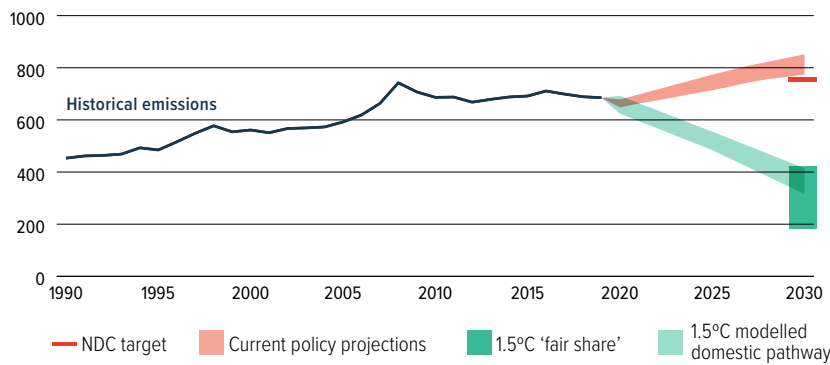




NOT ON TRACK FOR A 1.5°C WORLD

1.5°C compatible emissions pathway (MtCO₂e/year)¹

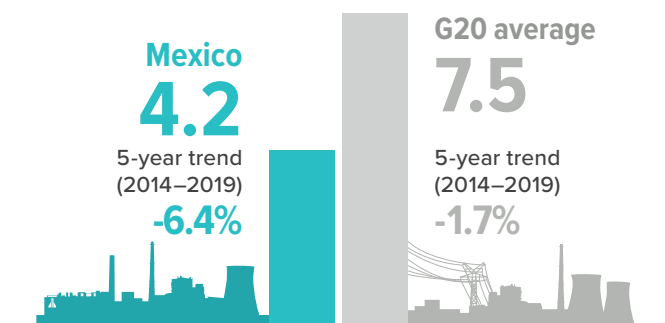


Mexico's NDC target would increase emissions 65% above 1990 levels, or to approximately 757 MtCO₂e (excl. LULUCF). To keep below the 1.5°C temperature limit, analysis by the 1.5°C Pathways Explorer shows that the country's emissions would need to be around 399 MtCO₂e by 2030, leaving an ambition gap of about 358 MtCO₂e. Mexico would need to strengthen its target to be in line with its 'fair share' contribution to the Paris Agreement's 1.5°C temperature limit.

Climate Action Tracker, 2022a; 2022b; Climate Analytics, 2022; Gütschow et al., 2021

PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS BELOW G20 AVERAGE


tCO₂e/capita² in 2019





Mexico's per capita emissions are 0.56 times the G20 average. Emissions per capita decreased by 6.4% from 2014–2019.

Gütschow et al., 2021; World Bank, 2022

RECENT DEVELOPMENTS

- 

In addition to submitting its third BUR and first National Adaptation Communication to the UNFCCC, **Mexico has the opportunity to deliver an updated NDC with increased climate ambition.**
- 

Current policies continue to prioritise oil refinery infrastructure. **Mexico is rehabilitating its existing oil refineries, has brought a new one online, and also acquired one in the USA.**
- 

The government continues to subsidise fossil fuels for the transport sector while the fuel-efficiency vehicle standard (NOM 163) is pending publication. **This significantly delays the emissions reductions in the transport sector.**

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION



Update the NDC to include stronger and more progressive mitigation commitments, aligned to the Paris Agreement's long-term goals.



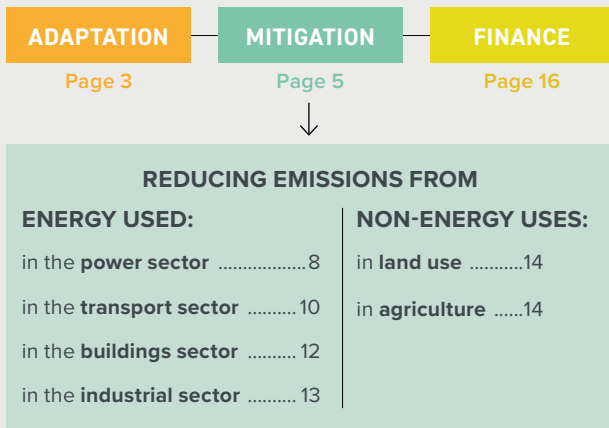
Reduce GHG emissions in the energy sector by fostering investment in socially-inclusive renewable energy projects, reversing fossil fuel subsidies and dependency, reducing methane emissions, and phasing-out coal power generation.



Encourage the reduction of internal combustion vehicles and increase electric vehicle (EV) penetration opportunities.

Contents

We unpack Mexico's progress and highlight key opportunities to enhance climate action across:



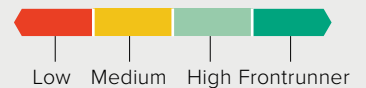
Legend

Trends show developments over the past five years for which data are available. A red exclamation mark indicates negative trends from a climate protection perspective.

Decarbonisation Ratings³ assess a country's performance compared to other G20 Members. A high score reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.



Policy Ratings⁴ evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.



SOCIO-ECONOMIC CONTEXT

Human Development Index

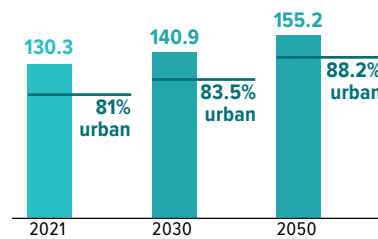


The Human Development Index (HDI) reflects life expectancy, level of education, and per capita income. Mexico ranks high.

Data for 2019. UNDP, 2020

Population and urbanisation projections

(in millions)

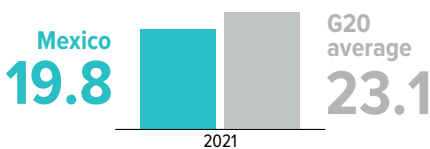


Mexico's population is projected to increase by 19% by 2050, and become more urbanised. An increase in Mexico's urban population is exacerbating existing problems of traffic congestion, air pollution and water pollution in Mexico's main cities.

United Nations, 2018; World Bank, 2022

Gross Domestic Product (GDP) per capita

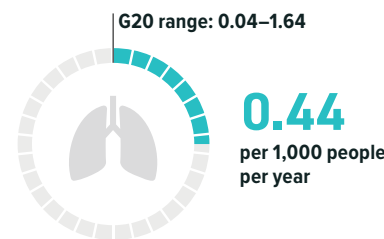
(thousand PPP constant 2015 international \$ per person) in 2021



World Bank, 2021

Death rate attributable to ambient air pollution

(death rate per 1,000 population per year, age standardised) in 2019



Over 48,300 people die in Mexico every year due to stroke, heart disease, lung cancer and chronic respiratory diseases as a result of outdoor air pollution. This is one of the lower levels in the G20.

Institute for Health Metrics and Evaluation, 2020

A JUST TRANSITION

The current administration has not yet developed a just energy transition strategy or policy. The Programme for the Development of the National Electric System 2022–2036 (PRODESEN) does not include the decommissioning of fossil fuels in the short term, and programmes to diversify the economy are almost non-existent. The country needs to adopt policies to phase out the use of fossil fuels i.e. coal and heavy oil while also reducing the social inequality gap, especially in vulnerable communities. Environmental, social and health impacts of the current energy model must be estimated, recognised, and fixed. Workers and communities must be able to find sustainable livelihoods in their territories. The development of a just transition pathway away from fossil fuels is a necessity that cannot be postponed if Mexico is to increase its climate action.

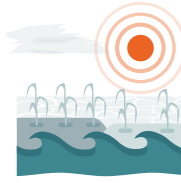
CER, 2020; Gobierno de México, 2022; Secretaría de Energía, 2022a

ADAPTATION

Paris Agreement: Increase the ability to adapt to the adverse effects of climate change and foster climate resilience and low-GHG development.



Extreme natural events such as hurricanes have intensified, with significant impacts on communities. The annual cost of the current expected damage caused by coastal flooding is close to USD 130m.



Projected droughts and floods will impact agricultural production, which will affect the country's economy.



Extreme temperatures and reduced precipitation lead to forest fires putting biodiversity at risk, changing the distribution of species, and resulting in invasive species, agricultural pests and diseases.

ADAPTATION NEEDS

Impacts of a changing climate

Exposure to warming



0.6°C
Higher

Between 2017 to 2021, the average summer temperatures experienced by people in Mexico were 0.6°C higher than the 1986–2005 average global mean temperature increase of 0.3°C.

Changes in the ability to work due to exposure to excessive heat



812m Labour hours lost
47% increase

In 2021, heat exposure in Mexico led to the loss of 812 million potential labour hours, a 47% increase from 1990–1999.

Loss of earnings from heat-related labour capacity reduction



4.5bn Loss in labour capacity (USD)
0.35% of GDP

Extreme heat can make it unbearable or even dangerous to work in a range of economically important sectors. The potential income loss in 2021 – in the service industry, manufacturing, agriculture, and construction sectors – from labour capacity reduction due to extreme heat was USD 4.5bn in 2021 in Mexico, or 0.35% of its GDP.

Romanello et al., 2022; World Meteorological Organization, 2022

Exposure to future impacts at 1.5°C warming and higher

Different levels of global warming are projected to have a wide range of impacts of varying severity across the world. The percentages at 1.5°C are calculated as an increase/decrease from the reference period of 1986–2006. Using the projected impacts at 1.5°C of warming as a reference, we compare impacts that may occur at higher levels of warming.

Climatic

	At 2°C	At 2.5°C	At 3°C
Local precipitation : +1% at 1.5°C warming	0.2 times	-1.2 times	-0.8 times
Local snowfall : -27.5% at 1.5°C warming	1.6 times	1.8 times	2.4 times

In Mexico, local precipitation is projected to increase by 1% above the reference period of 1986–2006, if global temperature rises by up to 1.5°C. Higher levels of warming, however, are projected to decrease precipitation: under a 2.5°C warming scenario, by 1.2 times. At 1.5°C of warming, snowfall is expected to decrease by 27.5% from the 1986–2006 average, with that decrease magnified 2.4 times under 3°C of warming.

Fresh water

	At 2°C	At 2.5°C	At 3°C
Surface run-off : -0.6% at 1.5°C warming	-0.3 times	0.1 times	1.4 times
River discharge : -3.3% at 1.5°C warming	1.4 times	1.9 times	2.2 times
Total soil moisture content : -1% at 1.5°C warming	2.1 times	4.4 times	4.7 times

As temperature increases, the availability of water decreases, drying the soil surface run-off and reducing river discharge. Indeed, the percentage of surface run-off and total soil moisture is projected to decrease by 0.6% and 1%, respectively, if global temperature rises by up to 1.5°C. This loss of surface run-off and soil moisture would be 1.4 times and 4.7 greater respectively, at 3°C of warming.

Agriculture	At 2°C	At 2.5°C	At 3°C
Reduction in maize yield : -3.3% at 1.5°C warming	2.1 times	3.5 times	5.5 times
Reduction in soy yield : -1.8% at 1.5°C warming	2.6 times	5.8 times	6.9 times
Reduction in wheat yield : -0.1% at 1.5°C warming	18.1 times	36.9 times	104 times

Maize yield is projected to decrease by 3.3% from the reference period average, at 1.5°C of warming, with this loss growing 5.5 times greater at 3°C of warming. Soy's projected yield declines from a 1.8% decrease to 6.9 times that decrease under 3°C. Wheat yields initially seem little impacted (0.1% decrease from the reference period), but at 3°C warming, this loss is projected to be multiplied 104 times.

Hazards	At 2°C	At 2.5°C	At 3°C
People annually exposed to heatwaves : 10,069,519 at 1.5°C warming	1.9 times	2.5 times	2.8 times
People annually exposed to crop failures : 62,254 at 1.5°C warming	4.8 times	12.3 times	20.4 times
People annually exposed to wildfires : 138,500 at 1.5°C warming	1.6 times	2 times	1.8 times

The number of people annually exposed to climate hazards is expected to rise as the temperature increases. For example, the number of people annually exposed to heatwaves in Mexico is projected to be just over 10 million people more than the number of people exposed during the reference period, at 1.5°C of warming, and 2.5 times greater if warming increases to 2.5°C.

Economic	At 2°C	At 2.5°C	At 3°C
Annual expected damage from tropical cyclones : +37.6% at 1.5°C warming	2.5 times	4.5 times	6.3 times
Annual expected damage from river flood : +26.9% at 1.5°C warming	2.6 times	2.6 times	4 times
Labour productivity due to heat stress: -3.4% at 1.5°C warming	1.6 times	2.2 times	2.8 times

The annual expected damage from tropical cyclones and river flooding at 3°C is 6.3 times and 4 times, respectively, what the damage is projected to be under a 1.5°C scenario (which is estimated to increase by 37.6% and 26.9%, respectively). Labour productivity is projected to decline 3.4% under 1.5°C of warming, and this decrease would be 2.2 times larger at 2.5°C of warming.

For further assessments of impacts under different warming scenarios, and a detailed explanation of the methodology, go to <https://climate-impact-explorer.climateanalytics.org>

Climate Analytics, 2021

ADAPTATION POLICIES

National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)												Monitoring & evaluation process		
		Agriculture	Biodiversity	Coastal areas and fishing	Education and research	Energy and industry	Finance and insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism		Water	
Mexico's National Strategy on Climate Change (ENCC)	2013	✓	✓	✓	✓	✓		✓	✓	✓					✓	The strategy should be reviewed and updated every six years; the first review is still pending from 2019.
Special Programme for Climate Change (PECC)	2021	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓		The Transparency System for Information and Actions (SIAT-PECC) is the reporting and monitoring process.
First Communication on Mexico's Adaptation under the UNFCCC	2022	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		Monitoring and evaluation policies have been developed by INECC.

Nationally Determined Contribution (NDC): Adaptation

TARGETS

- Reach net zero deforestation rate by 2030
- Implement actions in 50% of municipalities identified as vulnerable according to the Special Climate Change Programme 2020–2024
- Ensure the quantity and quality of water in human settlements with more than 500,000 inhabitants

ACTIONS

- Prevention and management of negative impacts on the human population and the territory
- Resilient production systems and food safety
- Conservation, restoration and sustainable use of biodiversity and ecosystem services
- Comprehensive water resources management with a focus on climate change Protection of strategic infrastructure and tangible cultural heritage

MITIGATION

Paris Agreement: Hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit to 1.5°C, recognising that this would significantly reduce the risks and impacts of climate change.

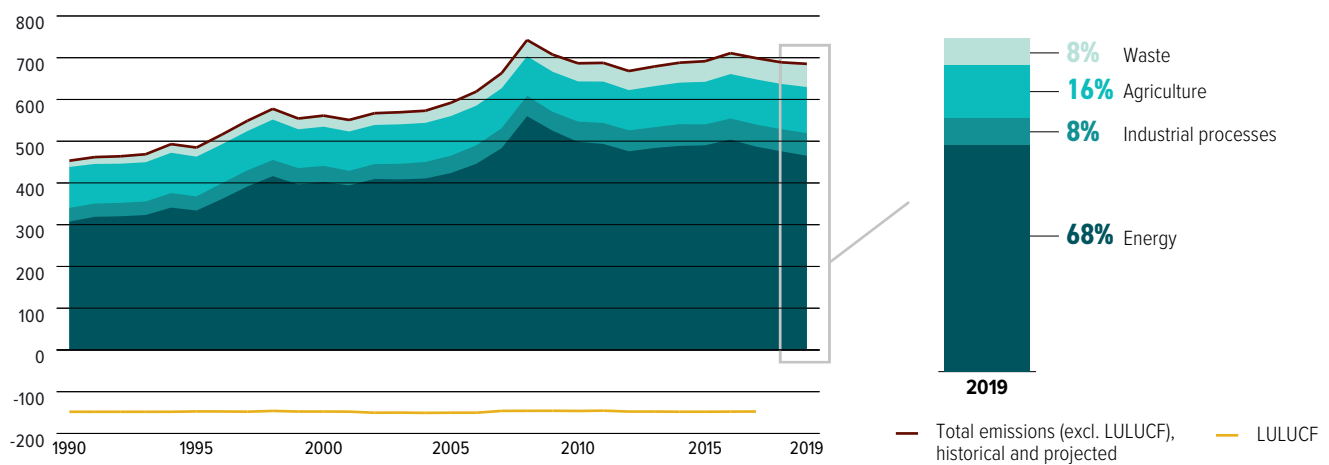
EMISSIONS OVERVIEW



Mexico's total **greenhouse gas emissions (excl. LULUCF)** have increased by **51%** (1990–2019). In the same period, its total methane emissions (excl. LULUCF) have increased by 68%.

GHG emissions across sectors⁵

Total sectoral GHG emissions (MtCO₂e/year)



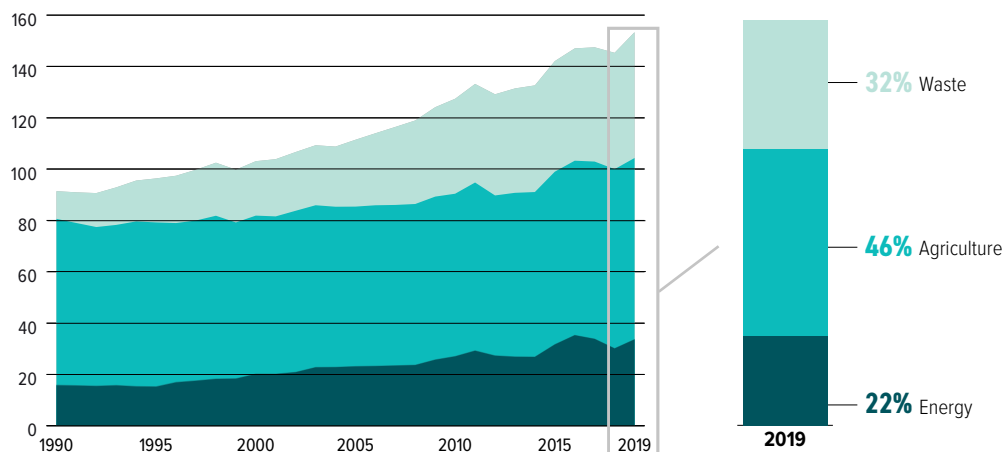
Mexico's emissions (excl. LULUCF) increased by 51% between 1990–2019 to 685 MtCO₂e/yr.

Gütschow et al., 2021

Mexico uses IPCC methodologies in its National Communications which results in some discrepancies with calculations produced by the PRIMAP methodology used in this graph.

Methane emissions by sector

Total CH₄ emissions (MtCO₂e/year)



Mexico signed the Global Methane Pledge at COP26 in November 2021.

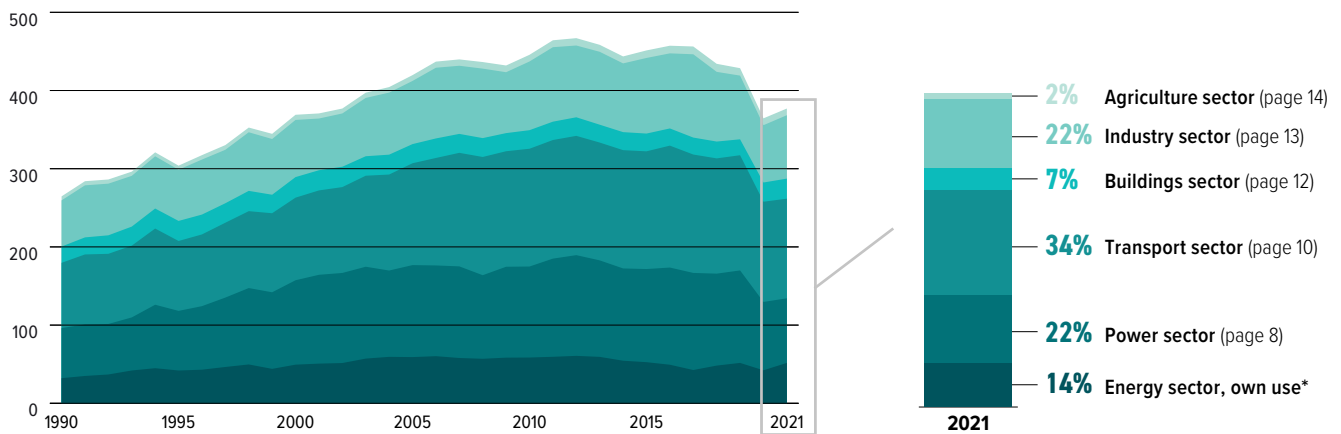
Participating countries pledged to undertake voluntary actions to contribute to a collective reduction of global methane emissions by at least 30% from 2020 levels by 2030. Further scrutiny of plans and implementation will be required.

Methane is a potent, though short-lived, greenhouse gas, accounting for an estimated third of global warming. Mexico's methane emissions (excl. LULUCF) increased by 68% between 1990–2019 to 153 MtCO₂e/yr. The majority of Mexico's methane emissions came from the agriculture sector in 2019 (46%). The second largest contributor is the waste sector, which represents 32% of total methane emissions.

Climate and Clean Air Coalition, 2021; Gütschow et al., 2021

Energy-related CO₂ emissions by sector

Annual CO₂ emissions (MtCO₂/year)



The largest driver of overall greenhouse gas emissions are CO₂ emissions from fuel combustion. In Mexico, emissions have been increasing from 1990–2019. They dropped significantly in 2020 due to the COVID-19 pandemic but have started to rebound as the economy began recovering in 2021. The transport sector produces 34% of these fuel combustion emissions followed by the power sector at 22%.

Enerdata, 2022

As Mexico follows IPCC methodologies, there are some differences when comparing data produced with Enerdata's methodology. *Includes energy-related CO₂ emissions from extracting and processing fossil fuels.

ENERGY OVERVIEW



Fossil fuels still account for 86% of Mexico's total primary energy supply, with oil the most dominant energy source (44%) followed by natural gas (38%). Renewables only make up 8% of the energy supply.

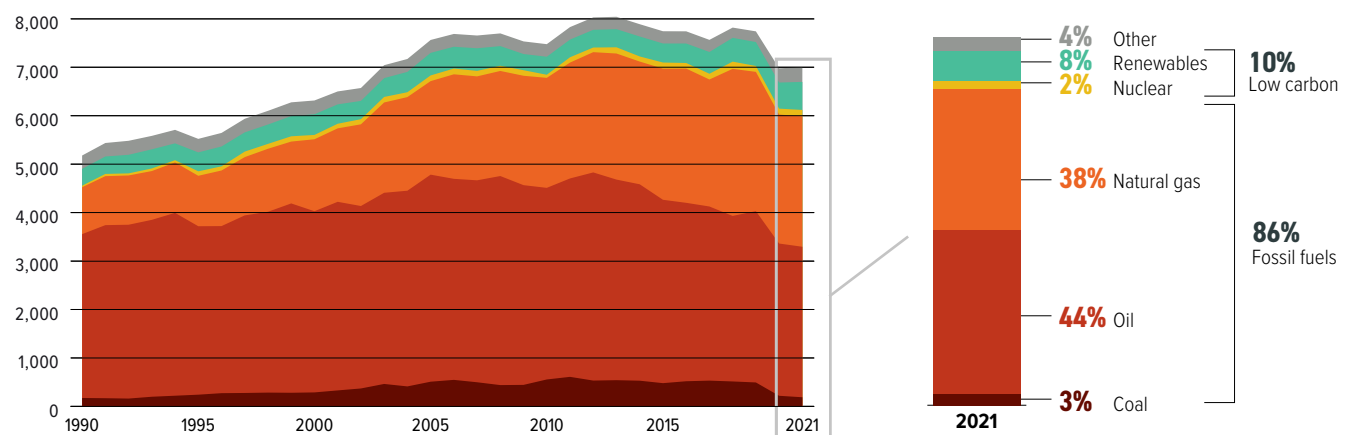


The share of fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050, and to substantially lower levels without carbon capture and storage.

Rogelj et al., 2018

Energy mix

Total primary energy supply (PJ)



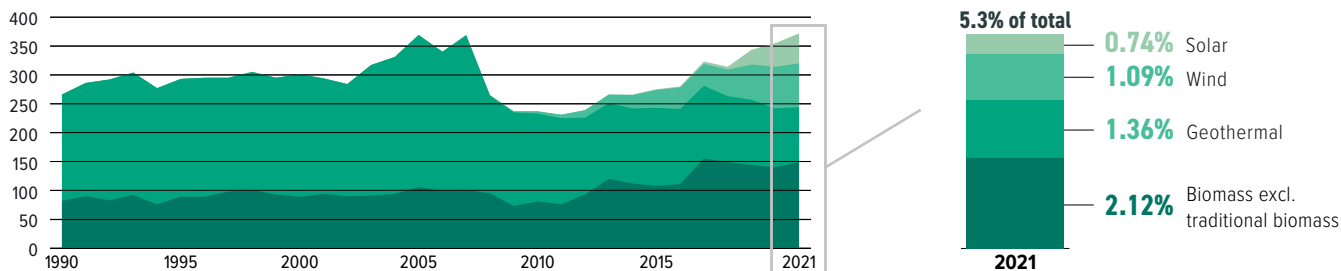
This graph shows the fuel mix for all energy supply, including energy used not only for electricity generation, heating and cooking, but also for transport fuels. Fossil fuels (oil, coal, and gas) make up 86% of Mexico's energy mix, which is still higher than the G20 average (81% in 2021). The share of renewable energy in the Mexican energy supply has remained relatively constant, accounting for 8% of total energy supply.

Enerdata, 2022

There are some methodologically derived differences between Mexico's official data and the IEA-based Enerdata figures referenced here.

Solar, wind, geothermal and biomass development

As a share of total primary energy supply (TPES) (PJ)

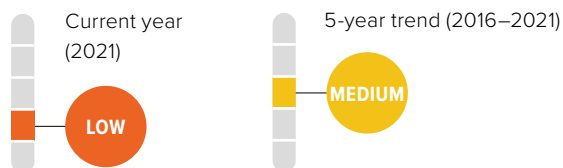


Solar, wind, geothermal and biomass, excluding traditional biomass, account for 5.3% of Mexico’s energy supply – the G20 average is 7.5%. The share in total energy supply has increased by around 46.5% in the last 5 years (2016–2021). Biomass (for electricity and heat) makes up the largest share.

Enerdata, 2022

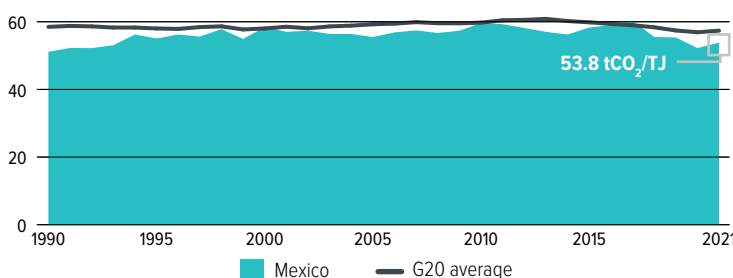
Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts. There are some methodologically derived differences between Mexico’s official data and the IEA-based Enerdata figures referenced here.

Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

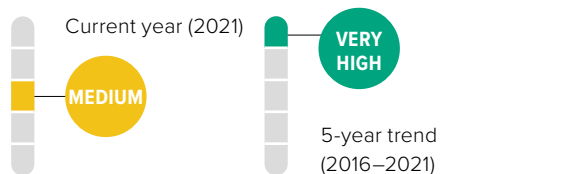


Carbon intensity of the energy sector

Tonnes of CO₂ per unit of TPES (tCO₂/TJ)



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



Carbon intensity is a measure of how much CO₂ is emitted per unit of energy supply. The emissions intensity of Mexico’s energy sector is 53 tCO₂/TJ and has trended downward by 12% between 2016–2021, faster than the G20 average decline of only 4%. The energy sector’s emissions intensity reached its lowest level in 2020, partly due to the pandemic-related economic slowdowns, before slightly increasing in 2021 as the economy began to recover.

Enerdata, 2022

Energy supply per capita

TPES per capita (GJ/capita) in 2021

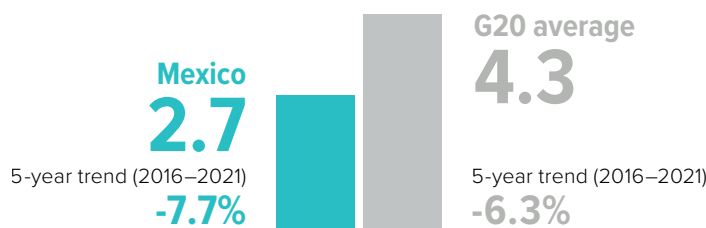


The level of energy supply per capita is closely related to economic development, climatic conditions and the price of energy. In 2021, energy supply per capita in Mexico was 54 GJ below the G20 average of 99 GJ, and supply has decreased significantly faster between 2016 and 2021 (15%) than the G20 average of 1.65% over the same period.

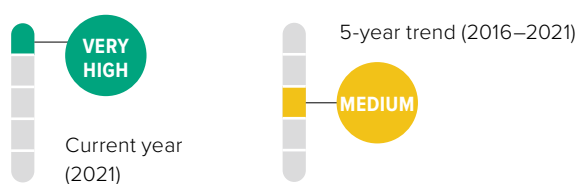
Enerdata, 2022; World Bank, 2022

Energy intensity of the economy

(TJ/million US\$2015 GDP) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

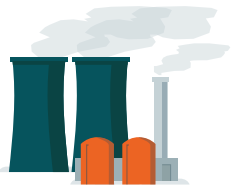


This indicator quantifies how much energy is used for each unit of GDP. This is closely related to the level of decarbonisation, efficiency achievements, climatic conditions or geography. Mexico’s energy intensity is lower than the G20 average and has been decreasing at a slightly faster rate of 7.7% (2016–2021) compared to the G20 average decrease of 6.3%. Mexico’s government continues to go backwards on climate action by favouring fossil fuels over renewable energy generation.

Enerdata, 2022; World Bank, 2021

POWER SECTOR

Emissions from energy used to make electricity and heat



Mexico's power sector is still heavily dependent on fossil fuels, primarily on natural gas. While the power sector produced 3% of electricity from coal and 8% from oil in 2021, 62% of its power was produced by natural gas and only 23% by renewables. Mexico's plans for the power sector are in stark contrast to what is required to limit warming to 1.5°C.

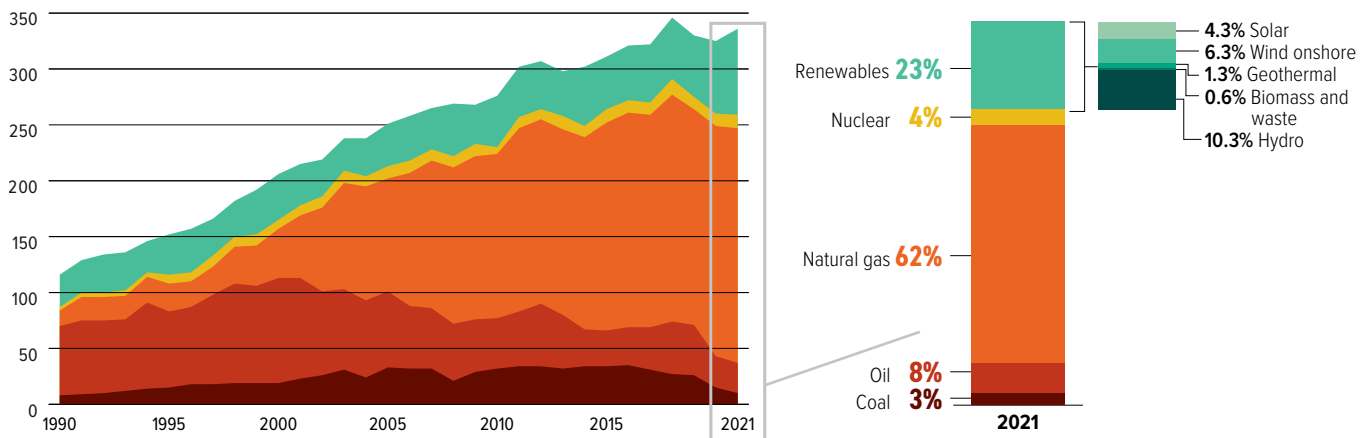


Worldwide, coal use for power generation needs to peak by 2020, and between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. By 2040, the share of renewable energy in electricity generation has to be increased to at least 75%, and the share of unabated coal reduced to zero.

Climate Action Tracker, 2020; Rogelj et al., 2018

Electricity generation mix

Gross power generation (TWh)



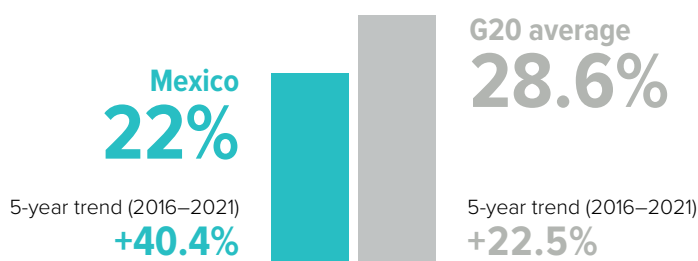
Mexico generated 74% of its electricity from fossil fuels in 2021. The share of renewable energy in Mexico's power sector has been increasing, accounting for approximately 23% of the power mix in 2021. At 10.3%, hydropower remains the largest source of renewable energy, but, depending on the installation, it could have negative environmental and social impacts.

Enerdata, 2022

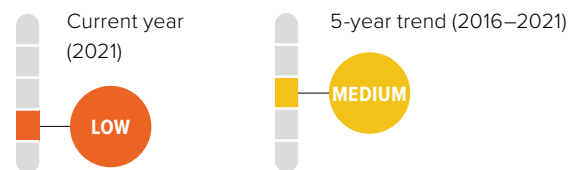
There are some methodologically derived differences between Mexico's official data and the IEA-based Enerdata figures referenced here.

Share of renewables in power generation

(incl. large hydro) in 2021



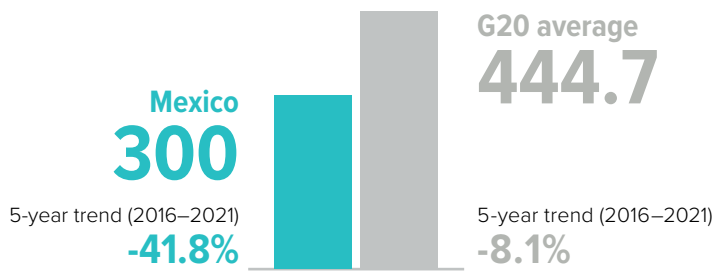
Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



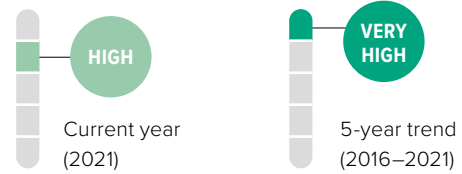
Enerdata, 2022

Emissions intensity of the power sector

(gCO₂/kWh) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



For each kilowatt hour of electricity, 300g of CO₂ are emitted in Mexico. Emissions intensity is decreasing commensurate with the drop in the share of oil and coal, while natural gas is still increasing.

Enerdata, 2022

There are a few methodological differences between Mexico's official data and that referenced here which is provided by Enerdata (based on IEA data).

POLICY ASSESSMENT

Renewable energy in the power sector



Mexico has set targets for “clean” energy shares in its power sector of 35% by 2024, 40% by 2033 and 50% by 2050. However, the current administration has prioritised fossil fuel extraction and thermal plants, implying these fossil fuels will be prevalent in electricity generation until at least mid-century. Mexico has already admitted that it will not meet its 2024 “clean” energy target in the power sector.

Mexico has renewable energy projects under development (over 3.5 GW) from previous auctions and corporate PPAs, expected to come online during 2020–2022. Solar capacity of 3 GW more could be online by 2025, contingent upon more regulatory certainty for developers and rapid economic recovery for the distributed segment.

Iniciativa Climática de México, 2022; International Energy Agency, 2020; Secretaría de Energía, 2022b

Coal phase-out in the power sector



Mexico’s coal capacity has remained unchanged in the past several years, and it has kept its three coal thermal plants. The Programme for the Development of the National Electric System 2022–2036 (PRODESEN) and the Federal Electricity Commission (CFE) business plan do not include the addition or decommissioning of coal power generation. The CFE has signed contracts to buy 1.5 million tonnes of coal from miners in the coal region in the northern state of Coahuila and promised to buy more coal for the rest of the current administration.

CFE, 2022; Secretaría de Energía, 2022b

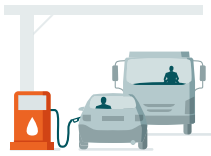
TRANSPORT SECTOR

Emissions from energy used to transport goods and people



The share of low-carbon fuels in the transport fuel mix must increase to between 40% and 60% by 2040 and 70% to 95% by 2050.

Climate Action Tracker, 2020; Rogelj et al., 2018



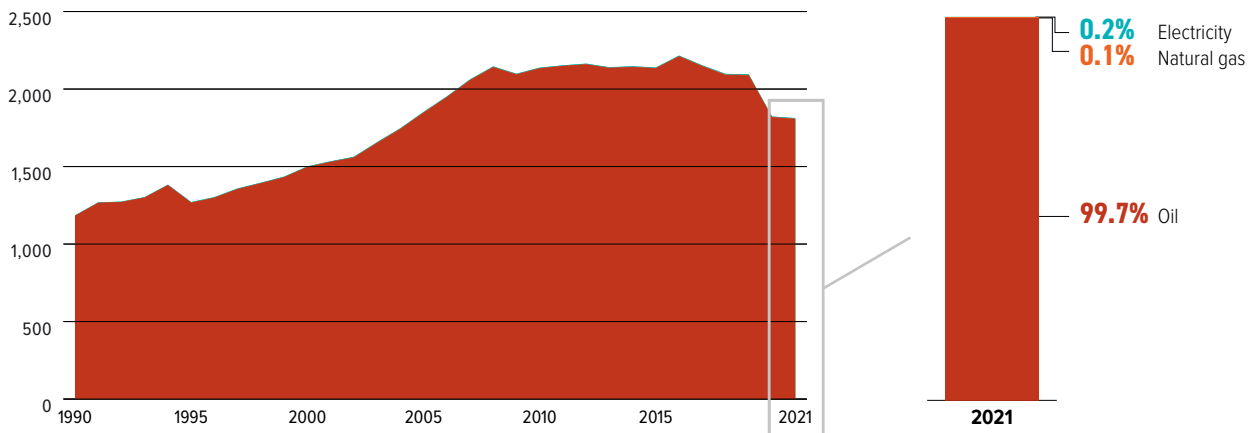
Emissions from transport are still on the rise. 93% of passenger transport is by road, and 76% of freight transport went by road in 2021. Both sectors are still **dominated by fossil fuels, and EVs made up only 0.5% of car sales in 2021.**

Transport's share of energy-related CO₂ emissions in 2021:



Transport energy mix

Final energy consumption by source (PJ/year)

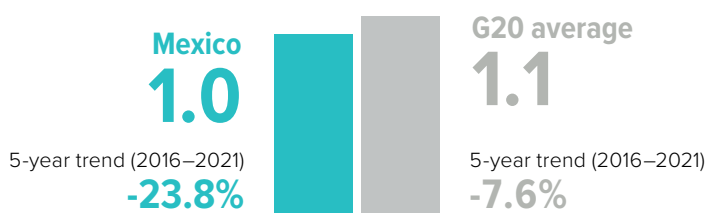


Electricity and biofuels make up only 0.2% of the energy mix in transport.

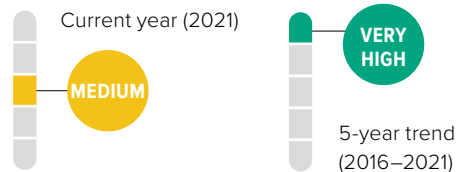
Enerdata, 2022

Transport emissions per capita

(excl. aviation) (tCO₂/capita) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

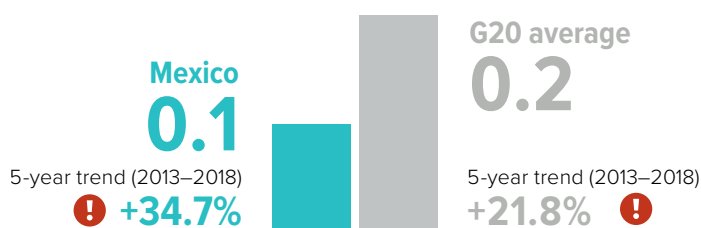


Per capita emissions in 2021 and the 5-year trend have been impacted by COVID-19 pandemic response measures and resulting economic slowdowns. For a discussion of broader trends in the G20 and the rebound of transport emissions in 2022, please see the Highlights Report at www.climate-transparency.org

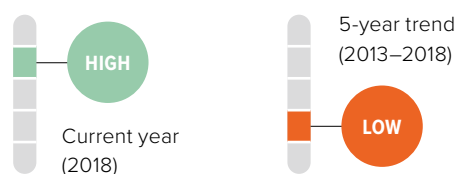
Enerdata, 2022; World Bank, 2022

Aviation emissions per capita⁶

(tCO₂/capita) in 2018

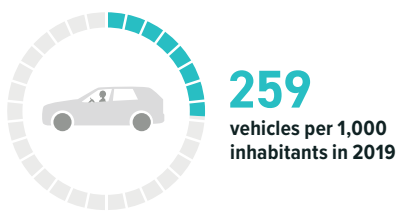


Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



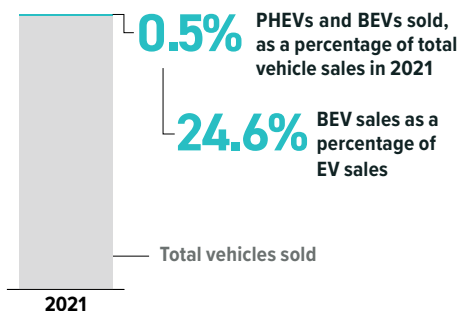
Enerdata, 2022; IEA, 2021a; World Bank, 2022

Motorisation rate



Enerdata, 2022

Market share of electric vehicles in new car sales (%)*

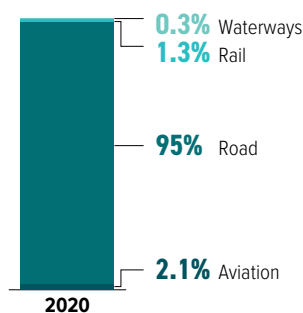


INEGI, 2021

Battery-Electric Vehicles (BEVs) have greater emissions mitigation potential when they are powered by electricity produced by renewables because they have no internal combustion engine (ICE), whereas plug-in hybrids (PHEVs) still produce emissions when using the ICE.

Modal split passenger transport*

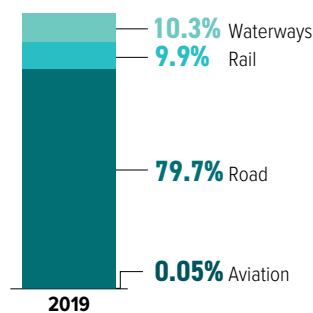
(% of passenger-km): road, rail and air



Agencia Reguladora del Transporte Ferroviario, 2021

Modal split freight transport*

(modal split in million tonnes-km)



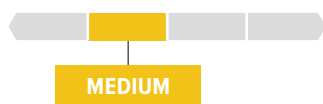
Due to data availability, only road and rail transport are included in the freight transport category. Other freight modes, e.g. waterways, are excluded due to lack of data for all countries.

SCT, 2019

*These data are not necessarily comparable with data from other G20 members.

POLICY ASSESSMENT

Phase out fossil fuel cars



Mexico's emissions reduction target is linked to the share of EVs, which in turn depends on the installation of electric charging stations and other supportive infrastructure. Although policies such as the Programme for Promotion of Electromobility through Investment in Charging Infrastructure (PEII) are being implemented, additional improved and long-term policies are needed. Updating fuel-efficiency standards for new ICE vehicles is fundamental for reducing emissions, but only as a bridging step to the complete phase-out of fossil fuel cars.

Secretaría de la Energía, 2022b; Iniciativa climática de México, 2021

Phase out fossil fuel heavy-duty vehicles



Freight transport has benefited from government support to improve the sector's energy efficiency with the voluntary clean transport programme of the Environment Ministry (SEMARNAT). However, no sales of electric heavy-duty vehicles were reported, only hybrids for freight transport. This is mainly due to the lack of infrastructure and the limited supply of fleet in the market.

Iniciativa Climática de México, 2021; Secretaría de Medio Ambiente y Recursos Naturales, 2021

Modal shift in (ground) transport



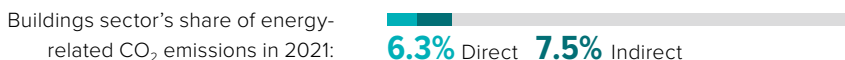
Only 10 Mexican cities have bike-sharing systems; 39 metropolitan cities have bike lanes and could benefit from this infrastructure. Overall, the special programme on climate change, drawn up by SEMARNAT and updated in 2021, establishes specific actions in the transport sector. Detailed actions include the development of the national strategy for electric mobility, the reduction of emissions through the operation of the clean transport programme and the promotion of low-emission public transport and local freight projects.

Iniciativa Climática de México, 2021; Secretaría de Medio Ambiente y Recursos Naturales, 2021

BUILDINGS SECTOR Emissions from energy used to build, heat and cool buildings



Direct emissions and indirect emissions from the buildings sector in Mexico account for 6% and 7.5% of total energy-related CO₂ emissions, respectively. **Per capita emissions from the buildings sector were less than 3 times the G20 average in 2021.**

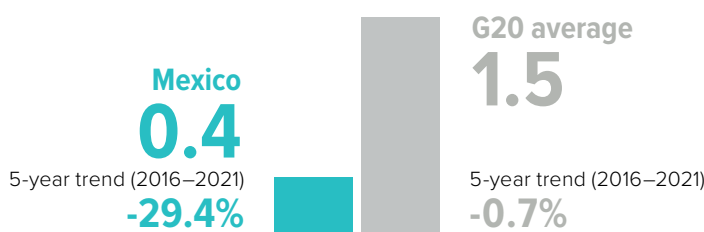


By 2040, global emissions from buildings need to be reduced by 90% from 2015 levels, and be 95–100% below 2015 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification in conjunction with complete decarbonisation of the power sector.

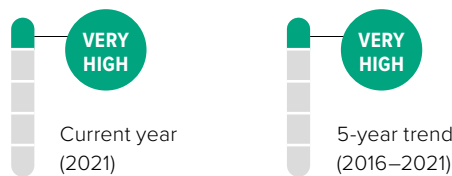
Climate Action Tracker, 2020; Rogelj et al, 2018

Buildings sector emissions per capita

incl. indirect emissions (tCO₂/capita) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

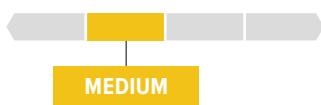


Buildings emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (from grid-electricity for air conditioning, appliances, etc.) Buildings-related emissions per capita were less than three times the G20 average in 2021. In 2018, mandatory energy efficiency policies covered 44% of the buildings sector, with building codes in place for both commercial and residential buildings. Mexico has decreased emissions intensity in the building sector by 29% (2016–2021), much faster than the G20 average reduction of under 1%.

Enerdata, 2022; World Bank, 2022

POLICY ASSESSMENT

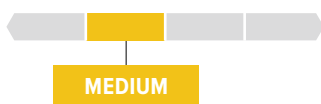
Near zero energy new buildings



The federal government established the working table for strengthening conformity assessment and surveillance of the energy codes and standards, which aims to increase the rate of compliance by domestic appliances companies. At subnational level, Yucatan state signed the Net Zero Carbon Buildings Commitment to reach zero emissions in its buildings portfolio by 2030 and is working toward achieving zero emissions by 2050. Meanwhile at city level, Monterrey is preparing a new building code that will include energy efficiency as its priority. There are also considerable actions implemented in the private sector, through buildings that get certifications such as LEED and EDGE. However, these efforts are found in only a handful of subnational governments and elite builders, which is not sufficient to meet the urgent need to transition to zero-carbon buildings.

IEA, 2021b; World Resources Institute, 2020

Renovation of existing buildings



The Energy Conservation Code for Buildings in Mexico (IECC-Mexico) is a voluntary model code that regulates requirements for energy conservation in new and existing residential and non-residential buildings. It includes every building-related energy efficiency standard issued by the government. However, there is no national agenda for retrofitting the existing buildings stock to reach energy efficiency standards or to incorporate renewable energy into existing buildings. There are some efforts to retrofit public buildings. The Trust for Energy Saving (FIDE in Spanish) provides financial and technical assistance to public and private entities on energy efficiency measures and renewable energy options to low-income families; however, these actions impact only a very small proportion of the buildings stock.

IEA 2021b

INDUSTRY SECTOR Emissions from energy use in industry

Industrial emissions need to be reduced by 65–90% from 2010 levels by 2050.

Rogelj et al., 2018

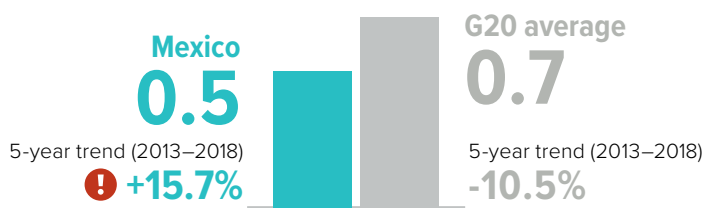


Direct emissions and indirect emissions from industry in Mexico make up 21.5% and 12% of energy-related CO₂ emissions, respectively. **Mexico's Energy Secretariat projects that energy use in industry will continue to rise through 2050**, with its main energy source continuing to be natural gas.

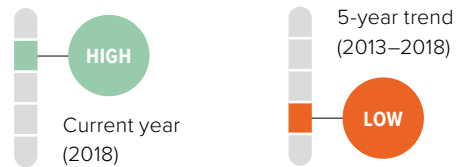


Industry emissions intensity⁷

(kgCO₂e/USD2015 GVA) in 2018



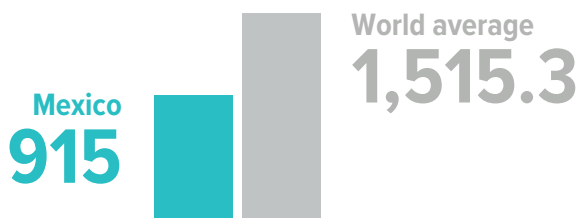
Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



Enerdata, 2021; World Bank, 2022

Carbon intensity of steel production⁸

(kgCO₂/tonne product) in 2019



Steel production and steelmaking are significant GHG emissions sources, and challenging to decarbonise.

Enerdata, 2022; World Steel Association, 2021

POLICY ASSESSMENT

Energy efficiency



Mexico has made progress in industry energy efficiency, although much still remains to be done. The main actions include the Energy Efficiency Standardisation Programme, which has resulted in 31 standards that regulate the consumption of electrical and thermal energy of equipment and systems in the residential, commercial services, industrial, transport and agricultural sectors. The programme includes energy efficiency labelling with specific requirements per product.

In the industry sector, voluntary energy efficiency and pilot projects are promoted in which improvement investments are made and financed with the savings obtained.

In terms of the regulatory framework, the Energy Reform and the Energy Transition Law (LTE in Spanish) incorporate energy efficiency as a key measure. In addition, the Energy Strategy 2014–2028 prioritises energy efficiency for the successful use of renewable energies.

CEPAL, 2018; IEA, 2021b; Gobierno de México, 2015a, 2015b

LAND USE SECTOR

Emissions from land use change and forestry



Global deforestation needs to be halted and changed to net CO₂ removals by around 2030.

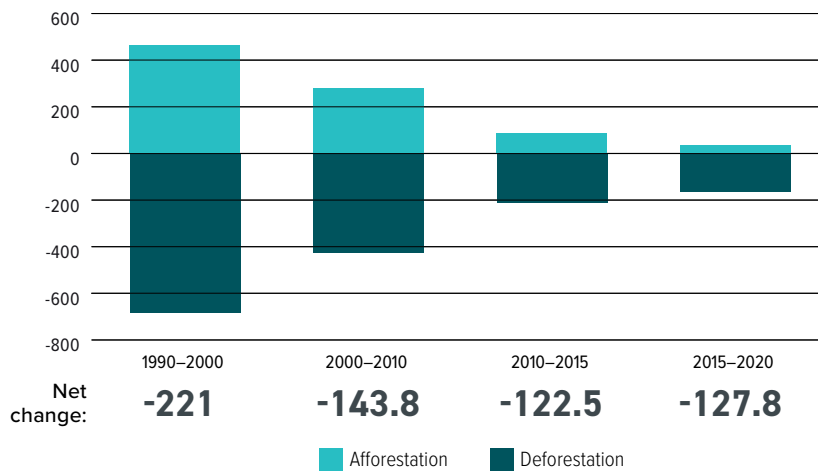
Rogelj et al., 2018



The land use, land-use change and forestry has been a stable carbon sink in Mexico over the last 20 years but **consistent action is required to protect its remaining forests and prevent the conversion of forests into croplands and cattle pastures** – the main cause of deforestation in Mexico.

Annual forest expansion, deforestation and net change

Forest area change in 1,000 ha/year



Between 2015–2020, Mexico lost 128 kha of forest area per year, largely due to a shift to cropland and cattle pastures. To begin to reverse this, the Mexican government’s Sembrando Vida (or Sowing Life) programme pays farmers to plant fruit or timber trees on small plots of land to encourage industry in deprived rural areas. The goal is to plant 1 billion trees.

Global Forest Assessment, 2020

POLICY ASSESSMENT

Target for net zero deforestation



In its NDC, Mexico committed to reduce GHG emissions from the forestry sector by 144% by 2030, and reaffirmed its commitment by signing the Glasgow Leaders’ Declaration on Forests and Land Use at COP26. Mexico still experiences net forest loss annually with insufficient budget made available to turn targets and pledges into practical actions. Without funds and implementation, deforestation will not be halted nor forest management improved, and the LULUCF sector will not contribute to emissions mitigation.

Secretaría de Bienestar, 2020

AGRICULTURE SECTOR

Emissions from agriculture



Methane emissions need to decline by 10% by 2030 and by 35% by 2050 (from 2010 levels). Nitrous oxide emissions (mainly from fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

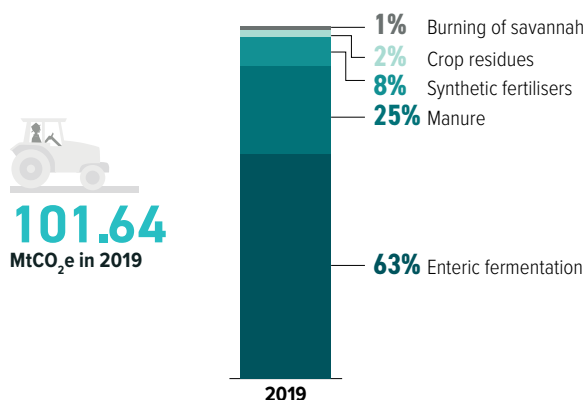
Rogelj et al., 2018



Mexico’s agricultural emissions are primarily from the digestive processes and manure of livestock (mainly cattle). **A 1.5°C compatible pathway requires behavioural and dietary shifts.**

Emissions from agriculture

excluding energy emissions, in 2019



In Mexico, GHG emissions from enteric fermentation (63%) and manure (25%) contribute just under 90% of emissions from the agriculture sector. Optimising feed digestibility, improving animal diets, and improving manure storage and handling all contribute to reducing emissions from this sector.

FAO, 2022

MITIGATION: TARGETS AND AMBITION



The science from the IPCC on the risks of exceeding 1.5°C warming is clear. The UN science body has projected that to keep the 1.5°C goal alive, the world needs to cut roughly halve emissions by 2030.

However, despite the Glasgow Climate Pact (1/CMA.3) agreement to “revisit and strengthen” 2030 targets this year, progress on more ambitious targets has stalled. Without far more ambitious government action, the world is heading to a warming of **2.4°C with current 2030 targets** and even warming **2.7°C with current policies**.

Climate Action Tracker, 2021a, 2022c; IPCC, 2022; UNFCCC, 2021

AMBITION: 2030 TARGETS

Nationally Determined Contribution: Mitigation

TARGETS

Unconditional: Reduce GHG emissions by 22% and black carbon emissions by 51% from its projected business-as-usual baseline by the year 2030 for a total 25% reduction.

Conditional: Mexico could increase its reductions: up to 36% for GHG and 70% for black carbon emissions.

ACTIONS

Not mentioned

Climate Action Tracker (CAT) evaluation of targets and actions



The CAT evaluates and rates several elements of climate action: policies and actions, targets and a country’s contribution to climate finance (where relevant) and combines these into an overall rating.

The CAT gives Mexico an overall rating of “highly insufficient”. The “highly insufficient” rating indicates that Mexico’s climate policies and commitments are inconsistent with any interpretation of a ‘fair share’ contribution and will lead to rising, rather than falling, emissions, with an exception being Mexico’s conditional NDC target, which is slightly lower than today’s emissions levels. Its internationally supported target is rated “insufficient” as it is not consistent with Mexico’s 1.5°C modelled domestic pathway, and the unconditional target is “critically insufficient”, meaning that this target is falling far behind the country’s ‘fair share’ contribution.

This CAT analysis was updated in June 2022.

For the full assessment of the country’s targets and actions, and the explication of the methodology, see www.climateactiontracker.org

Climate Action Tracker, 2022a

AMBITION: LONG-TERM STRATEGIES

The Paris Agreement invites countries to communicate mid-century, long-term, and low-GHG emissions development strategies. Long-term strategies are an essential component of the transition toward net zero emissions and climate-resilient economies.

Status	Submitted to UNFCCC, last update in 2016
Net zero target	No
Interim steps	Yes: 30% emissions reduction by 2030
Sectoral targets	Yes

FINANCE

Paris Agreement: Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.



Mexico spent more than USD 11bn on fossil fuel subsidies in 2020, the largest share going to petroleum followed by oil and natural gas. This is expected to increase in the coming years due to current energy policies. For Mexico to achieve its clean energy goals, it will have to increase investment in renewable technologies to more than USD 10bn by 2024. Mexico was the first country in Latin America to establish a voluntary carbon market.



Investment in green energy and infrastructure needs to outweigh fossil fuel investments by 2025.

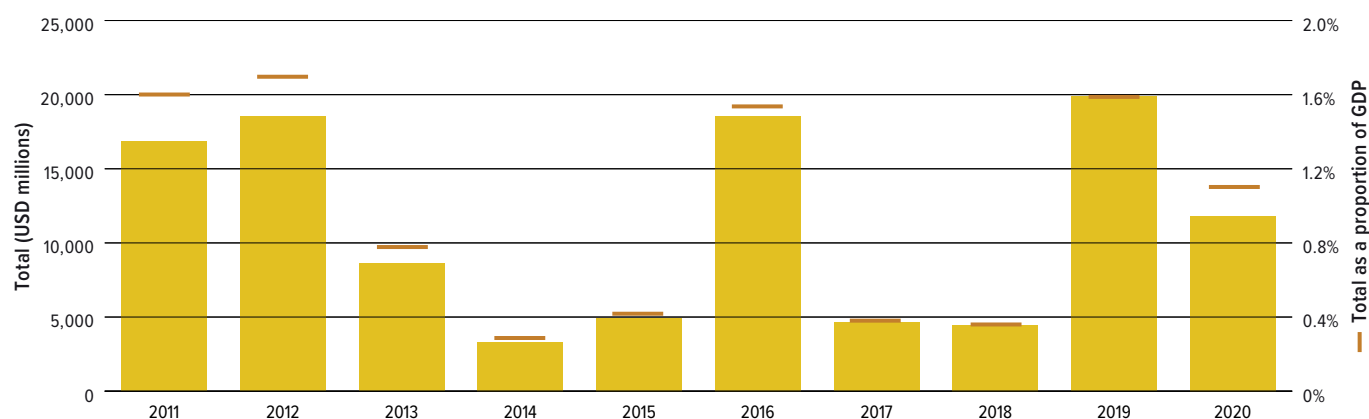
Rogelj et al., 2018

FISCAL POLICY LEVERS

Fiscal policy levers raise public revenues and direct public resources. Critically, they can shift investment decisions and consumer behaviour towards low-carbon, climate-resilient activities by reflecting externalities in the price.

Fossil fuel subsidies relative to national budgets

(USD millions)



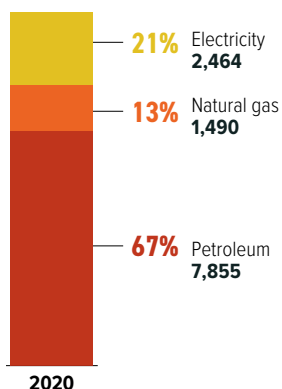
OECD-IEA Fossil Fuel Support Database, 2022

Fossil fuel subsidies by fuel type

(USD millions) in 2020



11,809
USD millions



Fossil fuel subsidies in Mexico have fluctuated considerably over the past decade, peaking in 2019. Although the 2020 total is lower than in 2019, at USD 11.8bn, it constitutes a higher portion of GDP, suggesting that GDP fell faster than subsidies. Of these subsidies, 67% went to petroleum, with electricity generation and natural gas receiving 21% and 13%, respectively. Production saw almost twice as much support as consumption. Fossil fuel subsidies in Mexico made up 4.2% of public spending in 2020.

The structure of Mexico's fossil fuel subsidies is heavily dependent on international oil prices. When these fell below set (and rising) national retail prices for gasoline, Mexico generated tax revenue. This suggests that high international prices due to the energy crisis will cause this revenue to invert, becoming tax expenditure – i.e. increasing subsidies for fossil fuels. Mexico also implemented new subsidies during the COVID-19 pandemic to encourage Pemex, the state-owned petroleum company, to continue exploration and extraction.

Energy Policy Tracker, 2022; OECD-IEA Fossil Fuel Support Database, 2022

Carbon pricing and revenue

In 2014, Mexico was the first country in Latin America to establish a voluntary carbon market, but it does not include the oil and natural gas sectors. This national carbon tax which generated USD 306m in revenue in 2021. This covers 46% of domestic emissions, with emissions priced at USD 3.5/tCO₂e. On 1 January 2020, the pilot phase of Mexico’s national carbon market started: the first emissions trading system (ETS) in Latin America. Paving the way for the transition to a fully operational ETS in 2023, the three-year pilot will test the ETS design, covering 37% of national emissions and including the energy (power, oil, and gas) and industrial sectors. Some Mexican states – Baja California, Tamaulipas and Zacatecas – have developed regional carbon taxes, with low carbon rates.

IACE, 2022

FINANCIAL POLICY AND REGULATION

Through policy and regulation, governments can overcome challenges to mobilising green finance, including real and perceived risks, insufficient returns on investment, capacity and information gaps.

So far, Mexico has taken a few steps towards greening its financial system. For instance, starting in 2022, the National Commission for the Pension System (CONSAR) made it mandatory for Pension Fund Managers (AFORE) to consider environmental, social, and governance (ESG) policies in their strategies. Nevertheless, certain actors within the financial sector are pushing for more ambition/action. In 2019, the Mexican Banking Association (ABM) launched a programme to support Mexican banks that included a Task Force on Climate-Related Financial Disclosure (TCFD) readiness tool to help gauge what must be prepared for disclosure. In 2020, Mexico’s Green Finance Advisory

Council (CCFV) requested that public issuers disclose climate-related risks aligned with the TCFD. That same year, the Bank of Mexico (BoM) – a founding member of the Network for Greening the Financial System (NGFS) – recommended that financial companies enhance ESG risk strategies using the TCFD framework.

The BoM later issued a statement at COP26 that, along with its Sustainable Finance Committee, it is leading the education of financial institutions on ESG and promoting the disclosure of climate and environmental risks by both companies and financial institutions.

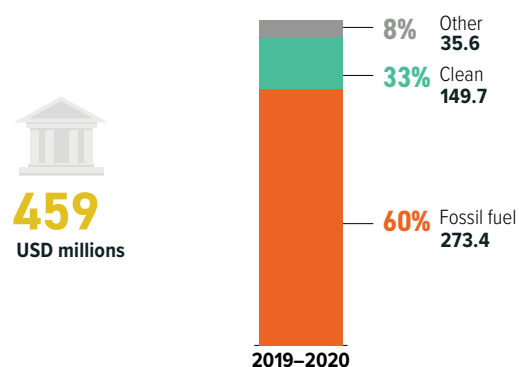
Banco de México, 2021; Task Force on Climate-Related Financial Disclosures, 2021

PUBLIC FINANCE

Governments steer investments through their public finance institutions, including via development banks both at home and overseas, and green investment banks. Developed G20 Members also have an obligation to provide finance to developing countries, and public sources are a key aspect of these obligations under the UNFCCC.

Public finance for energy

USD millions (2019–2020 average)



Between 2019 and 2020, Mexico provided an average of USD 460m in public finance per year to energy projects. Of this amount, 59% went to fossil fuels, almost exclusively to natural gas. USD 660m went to refinancing Los Ramones Norte Gas Pipeline in 2019, while USD 120m supported various solar and wind projects in Mexico. In 2020, public finance was considerably lower, with the largest single measure – USD 38m – in support of offshore gas platforms in the Gulf of Mexico.

Oil Change International, 2022

Provision of international public support

Mexico is not listed in Annex II of the UNFCCC and is not formally obliged to provide climate finance and, therefore, while it may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

Endnotes

For more detail about sources and methodologies, please download the CTR Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2022

Where referenced, “Enerdata, 2022” refers to data provided in July 2022 and, due to rounding, graphs may sum to slightly above or below 100%.

- The ‘1.5°C compatible pathway’ is derived from global cost-effective pathways assessed by the IPCC’s SR15, selected based on sustainability criteria, and defined by the 5th–50th percentiles of the distributions of such pathways achieving the long-term temperature goal of the Paris Agreement. Negative emissions from the land sector and novel negative emissions technologies are not included in the assessed models, which consider one primary negative emission technology (BECCS). In addition to domestic 1.5°C compatible emissions pathways, the ‘fair share’ emissions reduction range would almost always require a developed country to provide enough support through climate finance, or other means of implementation, to bring the total emissions reduction contribution of that country down to the required ‘fair share’ level.
- ‘Land use’ emissions is used here to refer to land use, land use change and forestry (LULUCF). The Climate Action Tracker (CAT) derives historical LULUCF emissions from the UNFCCC Common Reporting Format (CRF) data tables, converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from LULUCF, which under the IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).
- The Decarbonisation Ratings assess the current year and average of the most recent 5 years (where available) to take account of the different starting points of different G20 Members.
- The selection of policies rated and the assessment of 1.5°C compatibility are primarily informed by the Paris Agreement and the IPCC’s 2018 SR15. The Policy Assessment Criteria table below displays the criteria used to assess a country’s policy performance.
- In order to maintain comparability across all countries, this report harmonises all data with PRIMAP 2021 dataset to 2018. However, note that CRF data is available for countries which have recently updated GHG inventories.
- This indicator adds up emissions from domestic aviation and international aviation bunkers in the respective country. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.
- This indicator includes only direct energy-related emissions and process emissions (Scope 1) but not indirect emissions from electricity.
- This indicator includes emissions from electricity (Scope 2) as well as direct energy-related emissions and process emissions (Scope 1).

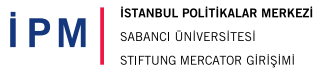
Policy Assessment Criteria

	LOW	MEDIUM	HIGH	FRONTRUNNER
Renewable energy in power sector	No policies to increase the share of renewables	Some policies	Policies and longer-term strategy/target to significantly increase the share of renewables	Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place
Coal phase-out in power sector	No targets and policies in place for reducing coal	Some policies	Policies + coal phase-out decided	Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)
Phase out fossil fuel cars	No policies for reducing emissions from light-duty vehicles	Some policies (e.g. energy/emissions performance standards or bonus/malus support)	Policies + national target to phase out fossil fuel light-duty vehicles	Policies + ban on new fossil fuel-based light-duty vehicles by 2035 worldwide
Phase out fossil fuel heavy-duty vehicles	No policies	Some policies (e.g. energy/emissions performance standards or support)	Policies + strategy to reduce absolute emissions from freight transport	Policies + innovation + strategy to phase out emissions from freight transport by 2050
Modal shift in (ground) transport	No policies	Some policies (e.g. support programmes to shift to rail or non-motorised transport)	Policies + longer-term strategy	Policies + longer-term strategy consistent with 1.5°C pathway
Near zero energy new buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + national strategy for near zero energy new buildings	Policies + national strategy for all new buildings to be near zero energy by 2020 (OECD countries) or 2025 (non-OECD countries)
Energy efficiency in industry	No policies	Mandatory energy efficiency policies cover more than 26–50% of industrial energy use	Mandatory energy efficiency policies cover 51–100% of industrial energy use	Policies + strategy to reduce industrial emissions by 75–90% from 2010 levels by 2050
Retrofitting existing buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + retrofitting strategy	Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020
Net zero deforestation	No policies or incentives to reduce deforestation in place	Some policies (e.g. incentives to reduce deforestation or support schemes for afforestation/ reforestation in place)	Policies + national target for reaching net zero deforestation	Policies + national target for reaching zero deforestation by 2020s or for increasing forest coverage

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