MEXICO

Climate Transparency

CLIMATE TRANSPARENCY REPORT: COMPARING G20 CLIMATE ACTION TOWARDS NET ZERO 2021

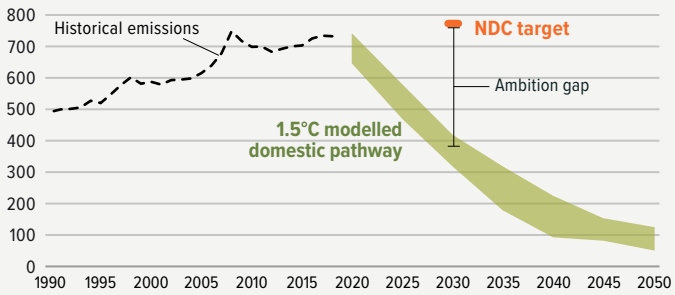
NOT ON TRACK FOR A 1.5°C WORLD

1.5°C

Mexico's conditional 2020 NDC target would increase emissions to 45% above 1990 levels, or to approximately 638 $MtCO_2e$, by 2030. To keep below the 1.5˚C temperature limit, Mexico's 2030 emissions would need to be around 383 $MtCO_2e$ (or 13% above 1990 levels), leaving an ambition gap of 255 $MtCO_2e$. All figures exclude land use emissions.

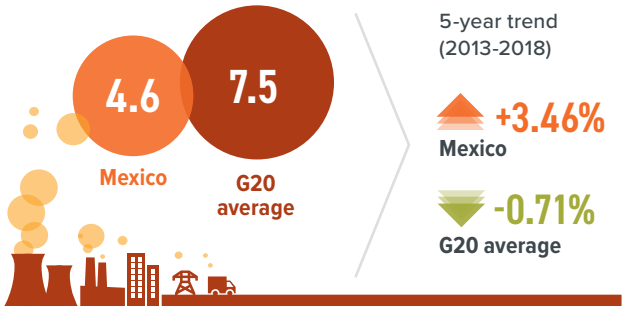
Gütschow et al., 2021; Climate Analytics, 2021

1.5°C compatible emissions pathway ($MtCO_2e$/year)[1]



PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS BELOW G20 AVERAGE

GHG emissions (incl. land use) per capita (tCO_2e/capita)[2] in 2018



Mexico's per capita emissions are 0.61 times the G20 average. Total per capita emissions have increased by 3.5% between 2013 and 2018.

Climate Action Tracker, 2021; Gütschow et al., 2021; United Nations, 2019

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

Develop and implement the NDC roadmap to define and make transparent the range of actions that are needed to **meet with the unconditional mitigation goal and adaptation commitments.**

Disincentivise state-owned fossil fuel-fired power plants to put Mexico on a decarbonisation path.

Increase the stringency of regulations for fuel efficiency and emissions limits for light- and heavy-duty vehicles and, implement the National Electromobility Strategy together with sustainable urban mobility programmes in cities.

Climate Action Tracker, 2020a; Grados, Martínez and Villarreal, 2020; Sierra Brozon et.al., 2020

RECENT DEVELOPMENTS

- Federal states and cities have **significantly increased their commitments to enhance climate action at the subnational level**. More ambitious policies and instruments to bring about decarbonisation are in place in some cities.
- **Current energy policies halt private renewable energy investment.** No significant renewable power capacity was added in 2020, and there are also no plans to increase capacity until 2027.
- **The Sembrando Vida programme has caused a 73,000ha loss of tree cover.** Annually, this programme gets **almost 10 times the budget of CONAFOR**, the National Forestry Commission responsible for conservation and administration of forests.

Cámara de Diputados del Congreso de la Unión de México, 2015; Averchenkova and Guzman Luna, 2018; CFE 2020; Tornel, 2021; UNEP 2021

CORONAVIRUS RESPONSE AND RECOVERY

As of July 2021, Mexico ranked fourth in Latin America for the number of cumulative COVID-19 cases since the beginning of the pandemic. Despite its initial economic slump, the Mexican economy has begun to recover in the summer of 2021, thanks mainly to the return of exports to the United States. Although Mexico has reportedly spent 1% of its GDP on pandemic recovery measures, virtually none of that spending has gone to green measures, while spending on fossil fuel infrastructure has increased.

Presidencia de la República, 2020; Lo, 2021; Secretaría de Hacienda y Crédito Público, 2021; Ritchie, 2021

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. The colour-coded arrows indicate assessment from a climate protection perspective: Orange is bad, green is good.

Decarbonisation Ratings[3] assess a country's performance compared to other G20 countries. A high score reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.

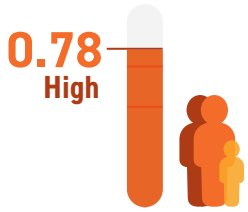
Very low | Low | Medium | High | Very high

Policy Ratings[4] evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.

Low | Medium | High | Frontrunner

SOCIO-ECONOMIC CONTEXT

Human Development Index (HDI)

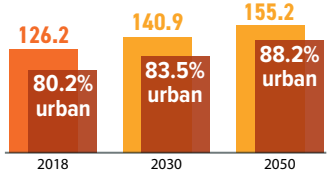


The HDI reflects life expectancy, level of education, and per capita income. Mexico ranks high.

Data for 2019. UNDP, 2020

Population and urbanisation projections

(in millions)



Mexico's population is projected to increase by 23% by 2050, and become slightly more urbanised. An increase in Mexico's urban population is exacerbating existing problems of traffic congestion, air pollution and water pollution already happening in Mexico's main cities, such as Mexico City. This will contribute to both worsening public health and increased emissions from transport and energy use.

United Nations, 2019; United Nations, 2018

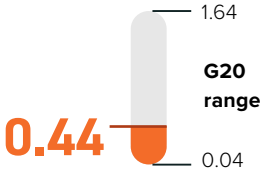
Gross Domestic Product (GDP) per capita

(PPP constant 2015 international $) in 2019

World Bank, 2021; United Nations, 2019

Death rate attributable to air pollution

Ambient air pollution attributable death rate per 1,000 population per year, age standardised in 2019



Over 48,000 people die in Mexico every year as a result of outdoor air pollution due to stroke, heart disease, lung cancer and chronic respiratory diseases. Compared to total population, this is still one of the lower levels in the G20.

Institute for Health Metrics and Evaluation, 2020

This source differs from the source used in last year's profiles, and therefore the data are not comparable.

A JUST TRANSITION

Civil society and other stakeholders promote discussion of a fair and inclusive energy transition to tackle inequalities and stop and reverse the federal administration's energy and climate policies. If it continues to prioritise fossil fuels over renewables, Mexico will not meet its climate commitments. It is urgent to set the right conditions to promote a comprehensive and socially inclusive energy transition, which is attentive to and addresses the justice dimensions of a chosen transition pathway, especially regarding workers and communities in poverty or disadvantage. The justice dimension includes developing policies that i) address the costs and benefits of the energy transition and its fair distribution among different sectors and actors; ii) identify the previous forms of misrecognition and the multiple ways in which the existing energy system has created past injustices; and iii) identify the instruments and spaces for participation and the right to make decisions about the type of energy to be exploited, by whom, where and how.

Baker, 2020; World Resources Institute, 2020; CER, 2020

ADAPTATION | ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE

PARIS AGREEMENT **Increase the ability to adapt to the adverse effects of climate change and foster climate resilience and low-GHG development.**

Mexico is the world's fifth most biodiverse country and is home to **12% of the planet's biodiversity, which will face threats from habitat loss** due to rising temperatures.

Mexico faces particular threats to its water supply and quality, as national precipitation is estimated to be reduced by 3-10% by 2050.

Rising sea levels and increased rainfall intensity also put Mexico at increased **risk of saltwater infiltration into aquifers** and from more intense tropical cyclones.

ADAPTATION NEEDS

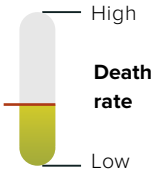
Climate Risk Index

Impacts of extreme weather events in terms of fatalities and economic losses that occurred. All numbers are averages (1999-2018).

Annual weather-related fatalities

117 Deaths **0.10 PER 100,000 INHABITANTS**

RANKING: 12th in the G20

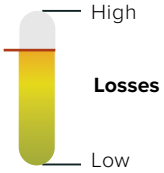


Based on Germanwatch, 2019

Annual average losses (US$ millions PPP)

3,002 **0.17 PER UNIT GDP (%)**

RANKING: 5th in the G20



Based on Germanwatch, 2019

Exposure to future impacts at 1.5°C, 2°C and 3°C

Impact ranking scale:

Very low | Low | Medium | High | Very high

			1.5°C	2°C	3°C
WATER		% of area with increase in water scarcity			
		% of time in drought conditions			
HEAT AND HEALTH		Heatwave frequency			
		Days above 35°C			
AGRICULTURE	Maize	Reduction in crop duration			
		Hot spell frequency			
		Reduction in rainfall			

Water, Heat and Health: own research; Agriculture: Arnell et al., 2019

Note: These indicators are national scale results, weighted by area and based on global data sets. They are designed to allow comparison between regions and countries and, therefore, entail simplifications. They do not reflect local impacts within the country. Please see technical note for further information.

CORONAVIRUS RESPONSE AND RECOVERY

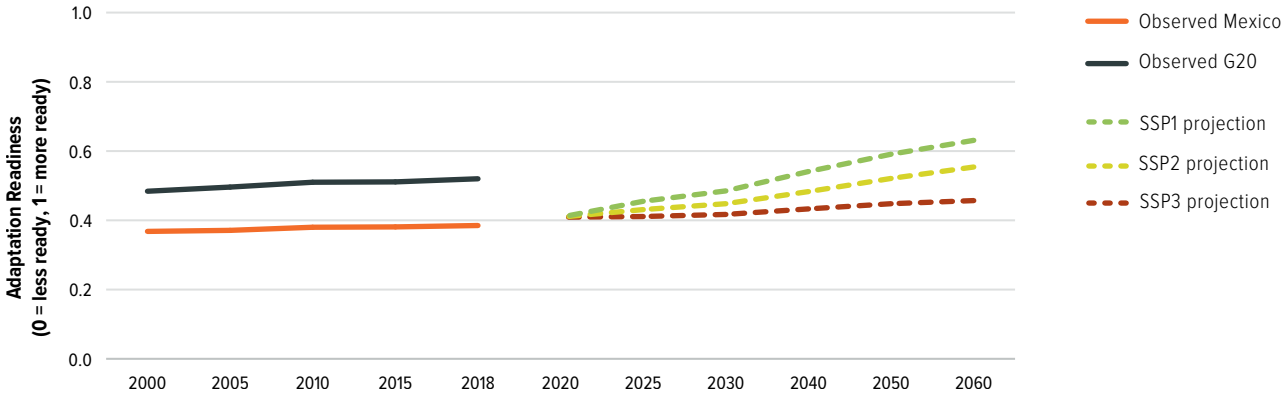
Although COVID-19 has been discussed in Congress, no regulatory or institutional changes have been put in place to address its effects at the federal level nor has a climate justice approach been adopted. At the sub-national level, COVID-19 responses vary in their scope, resources available, budget and coordination with state and federal authorities. The existing social policies and programmes were in place before the pandemic and were shielded from spending cuts.

Velázquez Leyer, 2021

Adaptation Readiness

The figure shows 2000-2018 observed data from the Notre Dame Global Adaptation Initiative (ND-GAIN) Index overlaid with projected Shared Socioeconomic Pathways (SSPs) from 2020 to 2060.

Notre Dame Global Adaptation Initiative (ND-Gain) Readiness Index



Mexico scored well below the G20 average in 2018 in terms of adaptation readiness. It has both a great need for investment and innovations to improve readiness, and an urgent need for implementation of adaptation measures. Even if it puts in place social, economic and governance measures compatible with projected SSP1, Mexico will only just exceed the G20's 2018 average score in 2040. Other measures, as represented by SSP2 and SSP3, will perpetuate its ranking below the G20 average in 2018, until 2050 and 2060 respectively.

The readiness component of the Index created by the ND-GAIN encompasses social (social inequality, information and communications technology infrastructure, education and innovation), economic, and governance indicators to assess a country's readiness to deploy private and public investments in aid of adaptation. The index ranges from 0 (low readiness) to 1 (high readiness).

The overlaid SSPs are qualitative and quantitative representations of a range of projections of future governance and, therefore, of possible adaptation readiness. The three scenarios shown here in dotted lines are described as a sustainable development-compatible scenario (SSP1), a middle-of-the-road (SSP2), and a 'Regional Rivalry' (SSP3) scenario.

Based on Andrijevic et al., 2020; ND-Gain Index, 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 Secretariat of Environment and Natural Resources with the participation of the Inter-Secretariat Commission on Climate Change will review every six years.
Mexico's National Strategy on Climate Change (ENCC)	2020														Approved by the Intergovernmental Climate Commission but second approval is needed by the Regulatory Body of Federal Government and Treasury. Its content has not been shared with civil society yet.
Special Programme for Climate Change (PECC)	2020														

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 | REDUCING EMISSIONS TO LIMIT GLOBAL TEMPERATURE INCREASE

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 GHG emissions excluding LULUCF have increased by 60% (1990-2018) and the government's climate targets for 2030 (22% below BAU scenario) and 2050 (50% below 2000 levels) are **not in line with a 1.5°C pathway**.

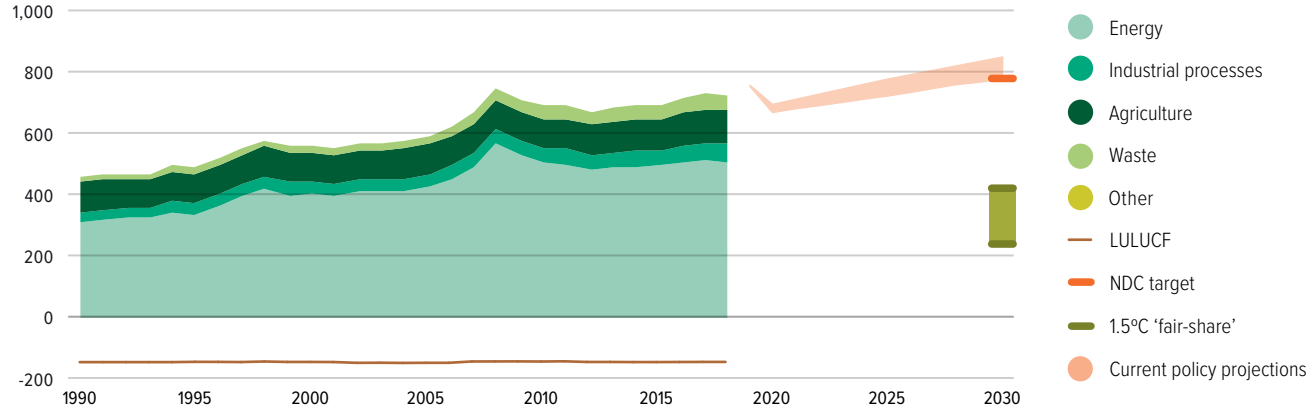
1.5°C COMPATIBILITY

In 2030, global CO_2 emissions need to be 45% below 2010 levels and reach net zero by 2050. Global energy-related CO_2 emissions must be cut by 40% below 2010 levels by 2030 and reach net zero by 2060.

Rogelj et al., 2018

GHG emissions across sectors and CAT 1.5°C 'fair-share' range ($MtCO_2e$/year)[5]

Total GHG emissions across sectors ($MtCO_2e$/year)



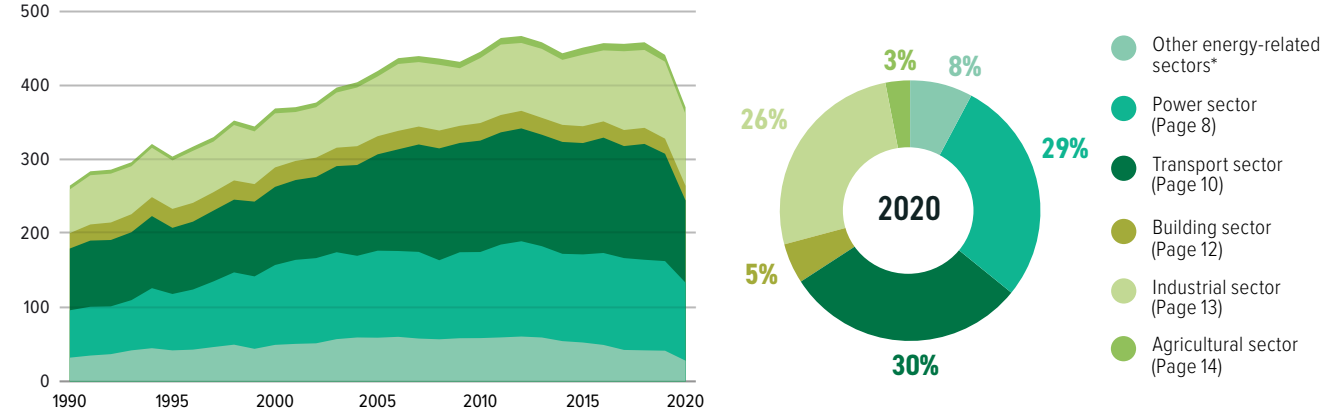
Mexico's emissions (excl. land use) increased by 60% between 1990 and 2018 to 724 MtCO2e. When considered by category, increases were largely due to a sustained increase in energy-related emissions in all sectors, with particularly large increases in emissions from the power, transport and industry sectors. Mexico's 2030 target, which contains the same pledge as its previous NDC, falls far short of its 'fair-share' contribution. Mexico should strengthen its target to be in line with its 'fair-share' contribution to the Paris Agreement's 1.5°C temperature limit.

Gütschow et al., 2021; Climate Action Tracker, 2020a, 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.

Energy-related CO_2 emissions by sector

Annual CO_2 emissions from fuel combustion ($MtCO_2$/year)



The largest driver of overall GHG emissions are CO_2 emissions from fuel combustion. In Mexico, the emissions have been increasing since 1990. The transport sector is the largest contributor to fuel combustion emissions with a 30% share, followed by the power sector and industry with 29% and 26%, respectively.

Enerdata, 2021

**'Other energy-related sectors' covers energy-related CO_2 emissions from extracting and processing fossil fuels. Due to rounding, some graphs may sum to slightly above or below 100%.*

Mexico uses IPCC methodologies in its National Communications which results in some discrepancies with the methodology which produced this graph. The 2020 (and earlier) data used in this profile does not use the National GHG Emissions Inventory (2015- 2019) released by INECC in October 2021.

ENERGY OVERVIEW

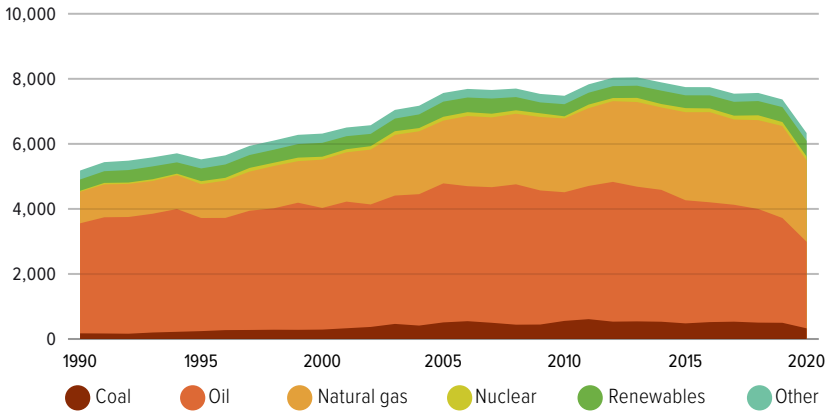
Fossil fuels still account for 87% of Mexico's total primary energy supply, with oil the most dominant energy source (42%) followed by natural gas (39%). **Renewables only make up 8% of the energy supply**, mostly from large hydroelectric plants, wind and solar power.

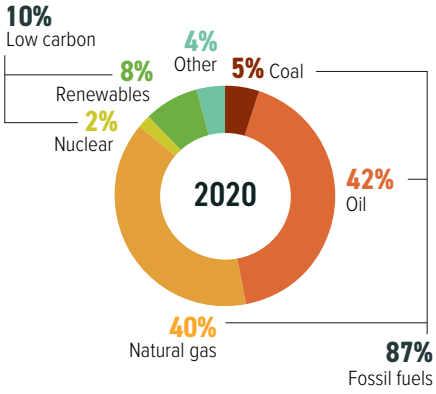
The share of fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050, and to substantially lower levels without carbon capture and storage (CCS).

Rogelj et al., 2018

Energy mix

Total primary energy supply (TPES) (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 87% of Mexico's energy mix, which is still higher than the G20 average of 81%. The share of renewable energy in the Mexican energy supply has remained relatively constant, with renewables accounting for 8% of Mexico's total energy supply.

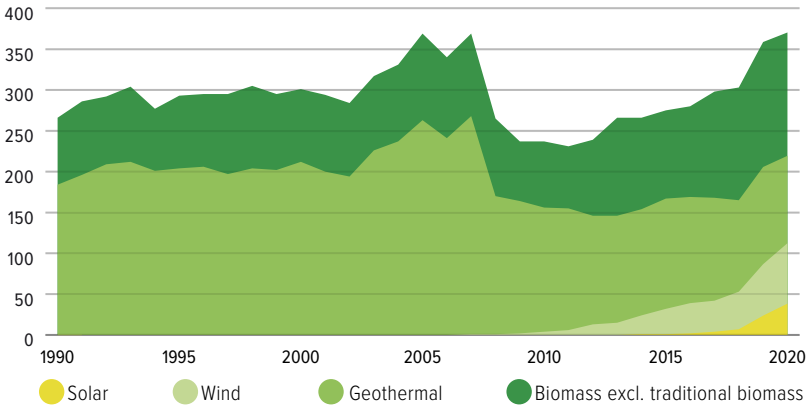
Enerdata, 2021

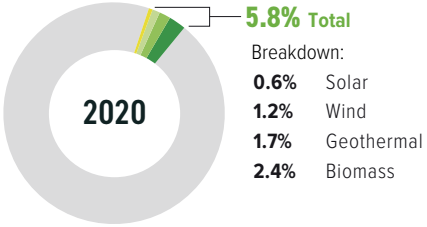
Due to rounding, some graphs may sum to slightly above or below 100%

Some methodological discrepancies arose when trying to match Mexico's official data with Enerdata, which is based on IEA.

Solar, wind, geothermal, and biomass development

TPES from solar, wind, geothermal and biomass (PJ)





Solar, wind, geothermal and biomass account for 5.8% of Mexico's energy supply – the G20 average is 7%. The share in total energy supply has increased by around 61% in the last five years in Mexico (2015-2020). Biomass (for electricity and heat) makes up the largest share.

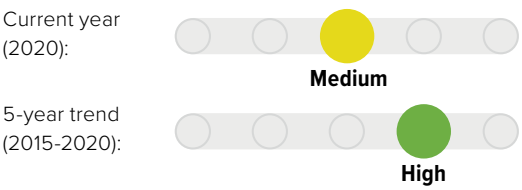
Enerdata, 2021

Due to rounding, some graphs may sum to slightly above or below 100%

Some methodological discrepancies arose when trying to match Mexico's official data with Enerdata, which is based on IEA.

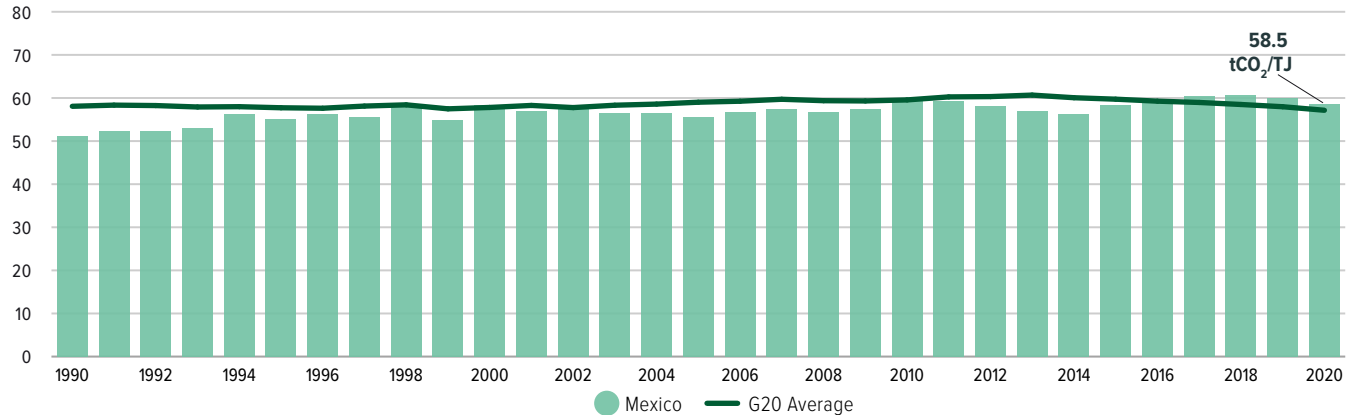
Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.

Decarbonisation rating: renewable energy share of TPES compared to other G20 countries



Carbon intensity of the energy sector

Tonnes of CO_2 per unit of TPES (tCO_2/TJ)



Carbon intensity is a measure of how much CO_2 is emitted per unit of energy supply.

The emissions intensity of Mexico's energy sector is 58 tCO_2/TJ and has trended upward by 1% since 2015, in contrast to the G20 average decline of 4% up to 2020. In 2020, the energy sector's emissions intensity was slightly above the G20 average of 57tCO_2/TJ, and this reflects a high share of increasing fossil fuels (gas) in the energy mix.

Enerdata, 2021; Secretaría de Energía, 2020

Some methodological discrepancies arose when trying to match Mexico's official data with Enerdata, which is based on IEA.

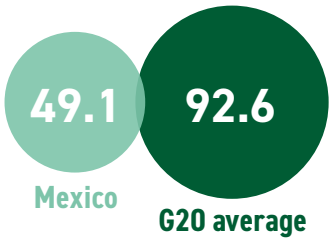
Decarbonisation rating: carbon intensity of the energy sector compared to other G20 countries

Current year (2020): **Medium**

5-year trend (2015-2020): **Low**

Energy supply per capita

TPES per capita (GJ/capita) in 2020



TPES per capita (GJ/capita): 5-year trend (2015-2020)

-19.8%
Mexico

-0.12%
G20 average

Decarbonisation rating: energy supply per capita compared to other G20 countries

Current year (2020): **Very high**

5-year trend (2015-2020): **Very high**

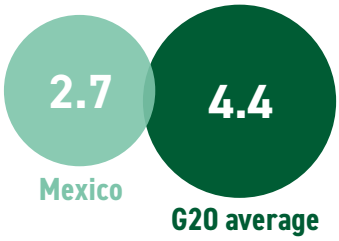
The level of energy use per capita is closely related to economic development, climatic conditions and the price of energy. Energy use per capita in Mexico was, at 49 GJ/capita in 2020, well below the G20 average, and decreased 19.77% between 2015 and 2020, which is far more rapidly than the G20 average decrease of 0.12% in the same period.

Enerdata, 2021; United Nations, 2019

Some methodological discrepancies arose when trying to match Mexico's official data with Enerdata, which is based on IEA.

Energy intensity of the economy

(TJ/million US$2015 GDP) in 2019



Energy intensity of the economy: 5-year trend (2014-2019)

-15.33%
Mexico

-10.56%
G20 average

Decarbonisation rating: energy intensity compared to other G20 countries

Current year (2019): **Very high**

5-year trend (2014-2019): **High**

This indicator quantifies how much energy is used for each unit of GDP. This is closely related to the level of industrialisation, efficiency achievements, climatic conditions or geography. Mexico's energy intensity is lower than the G20 average and has been decreasing at a slightly higher rate of 15% (2014-2019) than the G20 average rate of decrease of just under 11%.

Enerdata, 2021; 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 5% of electricity from coal and 10% from oil in 2020, 60% of its power was produced by natural gas and only 21% by renewables. This trend is likely continue under the government's strategy to promote "clean" energy, which **includes natural gas as part of "efficient" co-generation**.

28%

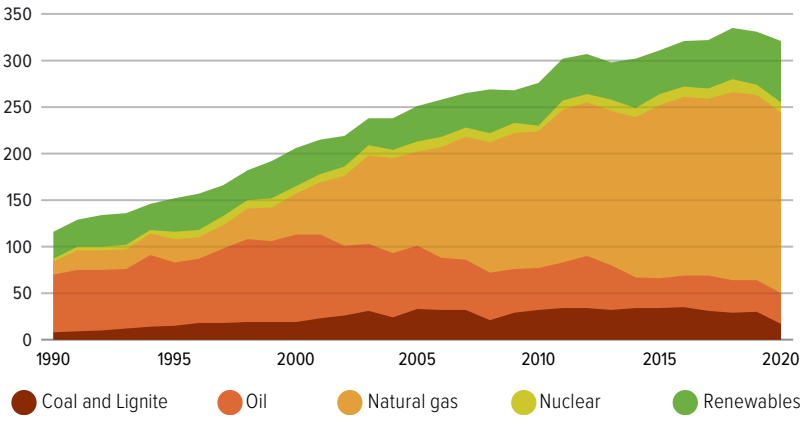
Share of energy-related CO_2 emissions from electricity and heat production in 2020.

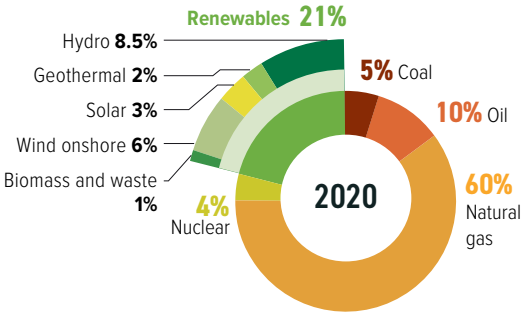
Worldwide, coal use for power generation needs to peak by 2020, and between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. By 2040, the share of renewable energy in electricity generation has to be increased to at least 75%, and the share of unabated coal reduced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

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

Electricity generation mix

Gross power generation (TWh)





Mexico generated **76% of its electricity from fossil fuels in 2020**. The share of renewable energy, including large hydro, in Mexico's power sector has been increasing steadily, accounting for approximately 21% of the power mix in 2020. However, natural gas still plays the largest role in the power supply, and the Mexican government has announced plans to continue natural gas exploration.

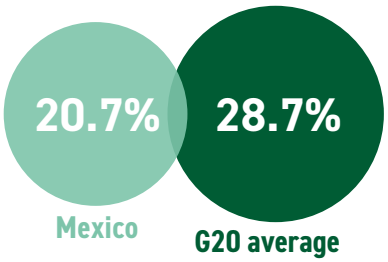
Enerdata, 2021

Due to rounding, some graphs may sum to slightly above or below 100%

Some methodological discrepancies arose when trying to match Mexico's official data with Enerdata, which is based on IEA.

Share of renewables in power generation

(incl. large hydro) in 2020

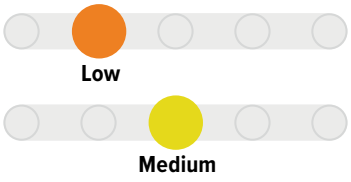


Share of renewables in power generation: 5-year trend (2015-2020)

+30.66%
Mexico

+24.49%
G20 average

Decarbonisation rating: share of renewables compared to other G20 countries



Enerdata, 2021

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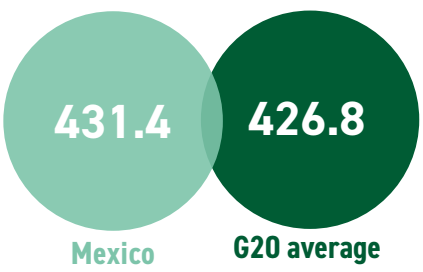
Emissions intensity of the power sector

(gCO_2/kWh) in 2020

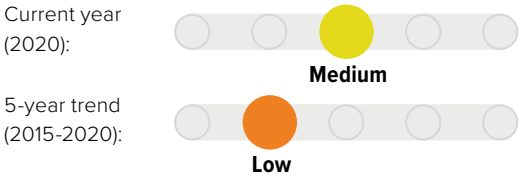


Emissions intensity of the power sector:
5-year trend (2015-2020)

-7.63%
Mexico

-11.18%
G20 average

Decarbonisation rating: emissions intensity compared to other G20 countries



For each kilowatt hour of electricity, 431 g of CO_2 are emitted in Mexico. The emissions intensity has only dropped marginally because the use of **fossil fuels for power generation has barely dropped, still accounting for 75% of the power mix**.

Enerdata, 2021

Some methodological discrepancies arose when trying to match Mexico's official data with Enerdata, which is based on IEA.

POLICY ASSESSMENT

Renewable energy in the power sector

Medium

While Mexico has some power sector policies that encourage the development of renewable power production, they are not being strongly enforced. Mexico has set targets for "clean" energy shares in its power sector of 35% by 2024, 40% by 2033 and 50% by 2050. However, while renewable technologies such as solar and wind are included under the category of "clean" energy, so are fossil-CCS technologies, nuclear and efficient co-generation with fossil fuels, such as natural gas. The country has already admitted that it will not meet its 2024 clean energy target in the power sector.

Solar and wind are increasingly cheaper than any new fossil fuel-based electricity capacity, but no significant renewable power capacity was added in 2020. Additional renewable energy capacity is also not planned to be included until 2027, according to Mexican power utility Business Plan.

Gobierno de la República de México, 2013; Cámara de Diputados del Congreso de la Unión de México, 2015; Secretaría de Energía, 2020; IRENA, 2020; CFE, 2021

Coal phase-out in the power sector

Low

So far, the Mexican government has not implemented any policy or path to reduce or phase out coal in the country's power sector. In 2020, in its effort to boost the local economy and increase coal extraction levels in the coal region, the Mexican government announced plans to purchase an additional two million tonnes of coal from small and medium mining companies. During the same year, the president announced plans to build a new coal-fired power plant. These measures have been "justified" under the banner of improving Mexico's energy sovereignty and grid stability.

CFE, 2020

CORONAVIRUS RESPONSE AND RECOVERY

The federal government used COVID-19 and other disruptions to roll back renewable energy policies. While most of the wind and solar power projects operating in Mexico are owned by private companies, the administration continues promoting and subsidising fossil fuels for electricity generation (coal, fuel oil and gas) because these are the technologies of the power plants it owns. To support this approach, the federal government has issued – through the Secretariat of Energy (SENER), Energy Regulatory Commission and the National Energy Control Centre (CENACE) – 10 different executive orders aimed at derailing renewables while supporting its fossil fuel plants.

CENACE, 2019; CFE, 2020

TRANSPORT SECTOR

Emissions from energy used to transport goods and people

Emissions from transport are still on the rise. 93% of passenger transport is by road, and 75% of freight transport travelled by road in 2021. **Both sectors are still dominated by fossil fuels**, and electric vehicles (EVs) make up only 0.26% of car sales. So far, the Mexican government has not set strong incentives for electrification of the transport sector nor to displace fossil fuels.

0.10%
Indirect emissions

29.98%
Direct emissions

Share of transport in energy-related CO_2 emissions

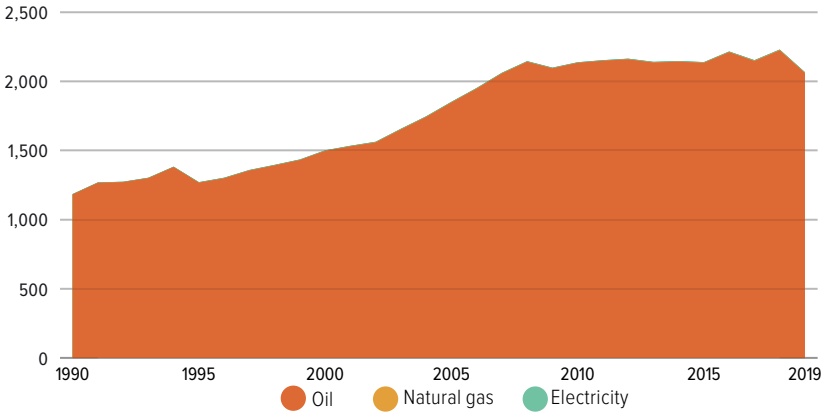
1.5°C COMPATIBILITY

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

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

Transport energy mix

Final energy consumption of transport by source (PJ/year)



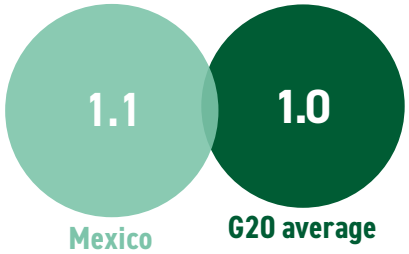
Electricity and natural gas together make up only 0.2% of the energy mix in transport.

Enerdata, 2021

Due to rounding, some graphs may sum to slightly above or below 100%

Transport emissions per capita

excl. aviation (tCO_2/capita) in 2020



Transport emissions: 5-year trend (2015-2020)

-7.21%
Mexico

-4.3%
G20 average

Decarbonisation rating: transport emissions compared to other G20 countries

Current year (2020):

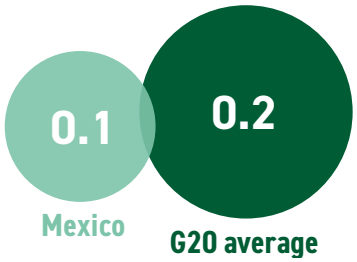
5-year trend (2015-2020):

Reductions in transport emissions per capita in 2020, and concomitant changes in the 5-year trends and decarbonisation ratings, reflect widespread economic slowdowns and transport restrictions imposed in response to the COVID-19 pandemic. For a discussion of broader trends in the G20 and the rebound of transport emissions in 2021, please see the Highlights Report at www.climate-transparency.org

Enerdata, 2021; United Nations, 2019

Aviation emissions per capita[6]

(tCO_2/capita) in 2018

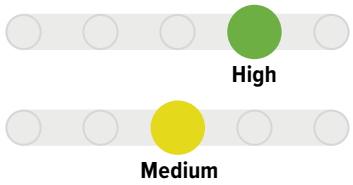


Aviation emissions: 5-year trend (2013-2018)

+34.68%
Mexico

+21.25%
G20 average

Decarbonisation rating: aviation emissions compared to other G20 countries



Enerdata, 2021; International Energy Agency, 2020; United Nations, 2019

Motorisation rate

259 VEHICLES
per 1,000 inhabitants in 2019 in the Mexico*

Enerdata, 2021

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

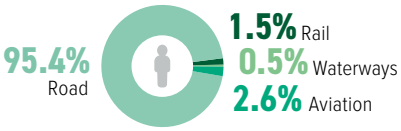
The share of EV sales in Mexico in 2020 was 0.26%.

0.26%

IEA, 2021a

Passenger transport

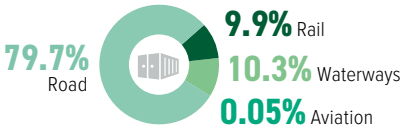
(modal split in % of passenger-km) in 2019*



Agencia Reguladora del Transporte Ferroviario, 2019

Freight transport

(modal split in million tonnes-km) in 2019*



SCT, 2019

*Owing to the variety of sources and data years available, these data are not comparable across G20 countries.

POLICY ASSESSMENT

Phase out fossil fuel cars

Medium

Mexico has set emissions performance standards for cars and has some tax incentives in place to encourage consumer purchase of EVs. However, in its recent strategy for promoting cleaner fuels and technologies, Mexico's Energy Secretariat indicates that petroleum will continue as the transport sector's dominant fuel source through 2050, with no plans to phase out fossil fuel vehicles. The Mexican government has not set any national targets for a share of EVs in new vehicle sales. Despite increasing urbanisation and population growth, the Mexican government projects that transport energy use will decrease through 2050, with few policies indicating how it will achieve this.

URBANET, 2019; Grados, Martínez and Villarreal, 2020; New Climate Institute, 2020; Secretaría de Energía, 2020

Phase out fossil fuel heavy-duty vehicles

Medium

Mexico maintains vehicle emissions standards for heavy-duty and diesel vehicles on all new sales of vehicles starting from 2021. These standards are the first soot-free standard to be enacted in Latin America and are equivalent to those of North America and the European Union. This will contribute to Mexico's pledge in its updated NDC to reduce black carbon emissions by 51% by 2030. However, it does not indicate any long-term strategy to reduce absolute emissions from freight transport.

Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), 2017; Blumberg, 2018

Modal shift in (ground) transport

Medium

Mexico has only one policy to encourage a switch from fossil fuel private vehicles to EVs. However, it has enacted policies focused on encouraging other forms of modal shift in ground transport, such as to non-motorised transport. During the COVID-19 pandemic, the Secretariat for Territorial and Urban Development (SEDATU) unveiled the Safe, Healthy, Sustainable and Supportive Mobility Strategy (M4S), incorporating emergency cycleways, expanding sidewalks and safer public transport use under pandemic conditions. The Sustainable Urban Mobility Strategy (EMUS) suffered budget cuts and, in its 2019 Strategy for the Promotion of Cleaner Fuels and Technologies, the Energy Secretariat does not project increases in public transport such as rail lines or buses, but rather an increase in air transport at the expense of road transport.

IEA, 2017; New Climate Institute, 2020; Secretaría de Energía, 2020

BUILDING SECTOR

Emissions from energy used to build, heat and cool buildings

Direct emissions and indirect emissions from the building sector in Mexico account for 5% and 11% of total energy-related CO_2 emissions, respectively. Per capita emissions from the building sector are **less than half of the G20 average**.

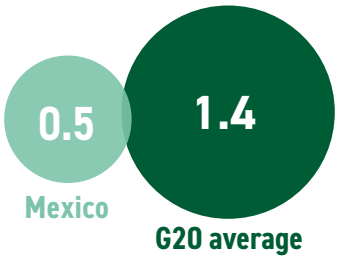
Share of buildings in energy-related CO_2 emissions. Building emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (grid-electricity for air conditioning, appliances, etc.)

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.

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

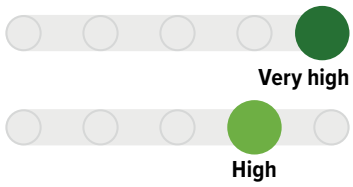
Building emissions per capita

(incl. indirect emissions) (tCO_2/capita) in 2020



Building emissions: 5-year trend (2015-2020)

Decarbonisation rating: building emissions compared to other G20 countries



Building-related emissions per capita are less than half of the G20 average as of 2020. This is likely the result of high coverage of energy efficiency policies, with 44% of energy use in the building sector covered by mandatory energy efficiency policies. Mexico has managed to decrease emissions intensity in the building sector by 12% (2015-2020), much faster than the G20 average.

Enerdata, 2021; United Nations, 2019

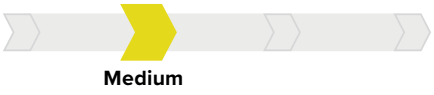
POLICY ASSESSMENT

Near zero energy new buildings

As of 2018, 44% of energy use in the building sector was covered by energy efficiency policies. Mexico has enacted mandatory energy efficiency standards for buildings, however, it has no national strategy for promoting near zero energy new buildings. Furthermore, the Roadmap for the Energy Efficiency Code and Standards for Buildings in Mexico is not being monitored as the technical follow-up committee for the Roadmap has not convened during the current federal administration (i.e., since 2017). Some states, such as Yucatan state, have enacted their own net zero energy building policies. Existing codes cover improved thermal insulation, energy conservation and windows in both residential and commercial buildings. Notably lacking is a support scheme for heating and cooling in buildings, an important and necessary policy option as Mexico is projected to see increased temperatures across much of its territory due to climate change.

Mackres and Loutfi, 2020; New Climate Institute, 2020; IEA, 2021; World Green Building Council, 2021

Renovation of existing buildings



Mexico's Building Energy Conservation Code applies to both new and existing residential and commercial buildings. However, it does not have a national agenda for retrofitting all existing buildings stock to energy efficiency standards nor for incorporating renewable energy into existing buildings.

IECC México, 2016; Mackres and Loutfi, 2020

INDUSTRY SECTOR

Emissions from energy use in industry

Direct and indirect emissions from industry in Mexico make up 26% and 15% of energy-related CO_2 emissions, respectively. Energy efficiency measures enacted in 2010 avoided using 5% of (anticipated) energy by 2018. **In 2018, mandatory energy efficiency policies covered 23% of Mexico's total energy use.**

26.14% Direct emissions

14.65% Indirect emissions

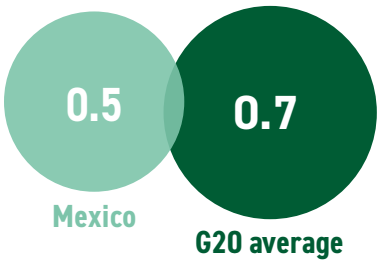
Share of industry in energy-related CO_2 emissions.

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

Rogelj et al., 2018

Industry emissions intensity[7]

(tCO_2e/USD2015 GVA) in 2017

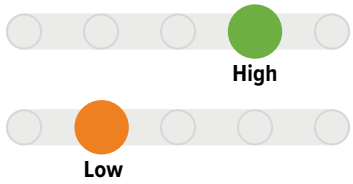


Industry emissions intensity: 5-year trend (2012-2017)

+0.02% Mexico

-16.45% G20 average

Decarbonisation rating: industry emissions intensity compared to other G20 countries



Enerdata, 2021; World Bank, 2021

Carbon intensity of steel production[8]

($kgCO_2$/tonne product) in 2016

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

World Steel Association, 2018

POLICY ASSESSMENT

Energy efficiency

As of 2018, only 16% of Mexico's industrial energy use was covered by energy efficiency policies. Overall, energy efficiency improvements have avoided only 5% of additional energy use in Mexico in the period 2010-2018. This is largely due to a switch in the industrial sector from mainly energy-intensive industry sectors to less-intensive manufacturing and service sectors. 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**.

Secretaría de Energía, 2020; IEA, 2021

LAND USE SECTOR

Emissions from changes in the use of the land

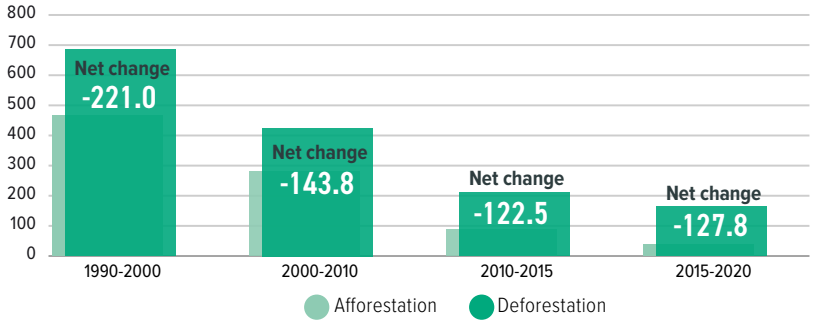
The land use and forestry sector has consistently been a net sink of emissions in Mexico. Although the rate of deforestation began to decrease after 2015, **Mexico still experiences net forest loss annually**. To stay within the 1.5°C limit, Mexico needs to ensure that the land use and forestry sector remains a net sink of emissions by conserving remaining forests and stopping the conversion of forests into croplands and cattle pastures – the main cause of deforestation in Mexico.

Global deforestation needs to be halted and changed to net CO_2 removals by around 2030.

Rogelj et al., 2018

Annual forest expansion, deforestation and net change

Forest area change in 1,000 ha/year



Although the deforestation rate has been gradually decreasing in Mexico over the last two decades, there continues to be an overall net loss of forest area in the country. Between 2015-2020, Mexico lost 128 kha of forested area. The main cause of deforestation within Mexico was shifting to cropland and cattle pastures. Although 2020 saw a small drop in overall deforestation, 2019 marked a 20-year high in deforestation in Mexico, with a total of 0.32 million ha deforested that year alone. Greater policy enforcement will be needed to ensure that deforestation does not rise again post-COVID-19 and that Mexico stays on track to reach its 2030 net zero deforestation target.

Global Forest Resources Assessment, 2020; CONAFOR, 2017

Note: There is a change of source and methodology for measuring this indicator from last year's profiles, which means the two years may not be directly comparable.

POLICY ASSESSMENT

Target for net zero deforestation

High

In 2017, Mexico set the target of achieving net zero deforestation by 2030 through its national REDD+ Strategy. The General Law for Sustainable Forest Development, enacted in 2018, made transforming the forestry sector into a carbon sink one of the mandatory criteria for Mexican forestry policy. In its 2016 initial NDC submission under the Paris Agreement, Mexico indicated plans to reduce LULUCF emissions by 144% by 2030, converting this sector into a carbon sink. However, in its updated NDC submission in 2020, it did not specify what contribution the LULUCF sector would make to its mitigation commitment, nor did it set any concrete actions for increasing forest coverage or sustainable forest management.

CONAFOR, 2017; Cámara de Diputados de la Unión, 2018; Climate Action Tracker, 2020

AGRICULTURE SECTOR

Emissions from agriculture

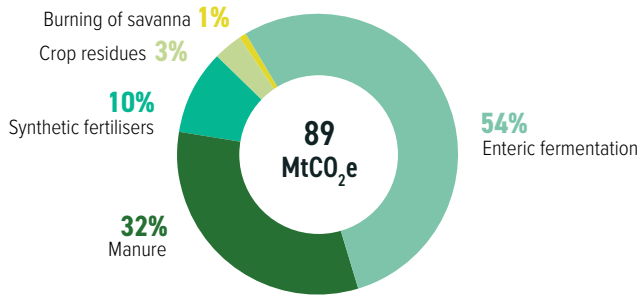
Mexico's agricultural emissions are mainly from livestock enteric fermentation (mainly cattle) and livestock manure. **A 1.5°C compatible pathway requires manure management and livestock diet improvement, as well as behavioural and dietary shifts, and economic incentives.**

Methane emissions (mainly enteric fermentation) 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

Emissions from agriculture (excluding energy)

Emissions from the agriculture sector in 2018



In Mexico, the largest sources of GHG emissions in the agriculture sector are livestock enteric fermentation (54%) and manure (32%). Livestock diet improvement, halting agricultural frontier, efficient use of fertilisers, dietary changes as well as reductions in food waste could help reduce emissions from this sector.

FAO, 2021

Due to rounding, some graphs may sum to slightly above or below 100%

MITIGATION: TARGETS AND AMBITION

The combined mitigation effect of Nationally Determined Contributions (NDCs) assessed by April 2021 is **not sufficient and will lead to a warming of 2.4°C by the end of the century.** This highlights the urgent need for all countries to submit more ambitious targets by COP26, as they agreed to do in 2015, and to **urgently strengthen their climate action to align to the Paris Agreement's temperature goal.**

Climate Analytics, 2021a

AMBITION: 2030 TARGETS

Nationally Determined Contribution (NDC): Mitigation

Mexico's updated NDC, submitted in December 2020, maintained its previous emissions reduction commitment of 22% below its BAU scenario by 2030. However, it also upwardly revised the 2030 projected emissions in its BAU, **resulting in an effectively weaker target than its previous NDC**. The revised BAU reports slightly lower numbers in 2030 for the transport, power, and oil and gas sectors while projecting higher 2030 emissions for the agriculture, industry, and waste sectors.

TARGETS

Unconditional: Reduce emissions 22% below BAU by 2030, including LULUCF (19% above 2010 levels by 2030, excluding LULUCF)

Conditional: Reduce emissions 36% below BAU by 2030, dependent on international financial support (2% below 2010 levels by 2030, excluding LULUCF)

ACTIONS

Not mentioned

Climate Action Tracker (CAT) evaluation of targets and actions

MEXICO'S OVERALL RATING

- 1.5°C Paris Agreement compatible
- Almost sufficient
- Insufficient
- **HIGHLY INSUFFICIENT**
- Critically insufficient

This CAT evaluation is a **new, overall rating**, that combines the several, separately rated elements, of policies and actions, domestic and internationally supported targets, 'fair-share target' and the country's contribution to climate finance. The "Highly insufficient" rating indicates that Mexico's climate policies and commitments are not consistent with any interpretation of a 'fair-share' contribution and lead to rising, rather than falling, emissions, with an exception being Mexico's conditional NDC target, which roughly stabilises emissions at today's level.

The CAT rates the internationally supported target as "Insufficient" as it is not in line with modelled domestic pathways, and the unconditional target as "Critically insufficient", meaning that this target is falling far behind the country's 'fair-share' contribution. Furthermore, Mexico's plans to not increase its 2030 mitigation ambition are contrary to the Paris Agreement's requirement that each successive NDC should represent a progression on their mitigation efforts. For the full assessment of the country's target and actions, and the explication of the methodology see www.climateactiontracker.org

Climate Action Tracker, 2021

This assessment includes our policy analysis from 22 September 2020 translated into our new rating methodology without new analysis of Mexico's climate policies since then, except the NDC update submitted in December 2020.

TRANSPARENCY: FACILITATING AMBITION

Countries are expected to communicate their NDCs in a clear and transparent manner in order to ensure accountability and comparability. The NDC Transparency Check has been developed in response to Paris Agreement decision 1/CP.21 and the Annex to decision 4/CMA.1, which sets out the "information to facilitate clarity, transparency and understanding" as crucial elements of NDCs.

NDC Transparency Check recommendations

Mexico's NDC was submitted to the UNFCCC in November 2016 and updated on 29 December 2020. A comparison of the 2016 and 2020 NDCs reveals some additional information has been provided in the form of:

- More detailed information on the adaptation component, recognising and prioritising communities vulnerable to climate change.
- A planning process to develop the NDC was held between different levels of government, civil society, and young people and included gender responsiveness measures.

There is still room to improve comparability, transparency, and understanding in Mexico's future NDCs by:

- Providing the assumptions and methodological approaches for accounting for BAU projections and accounting for anthropogenic GHG emissions and removals.
- Including emissions reduction assessments to ensure each of Mexico's NDCs is more stringent than its previous target, and aligns with the Paris Agreement's long-term objectives.
- Detailing the implementation plans to account for its target(s).

For more visit www.climate-transparency.org/ndc-transparency-check

AMBITION: LONG-TERM STRATEGIES

The Paris Agreement invites countries to communicate mid-century, long-term, and low-GHG emissions development strategies by 2020. 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
Interim steps	30% reduction by 2030
Sectoral targets	Yes
Net zero target	No
Net zero year	50% reduction below 2000 levels

FINANCE

MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS

PARIS AGREEMENT **Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.**

In 2019, **Mexico spent USD 17bn on fossil fuel subsidies**, with roughly 90% of those subsidies supporting fossil fuels. Oil alone received 73% of total subsidy spending. A carbon tax was introduced in 2014 for fossil fuels excluding natural gas. Therefore, tax is only levied on the additional amount of emissions that would be generated if oil were used instead of natural gas.

1.5 °C COMPATIBILITY

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

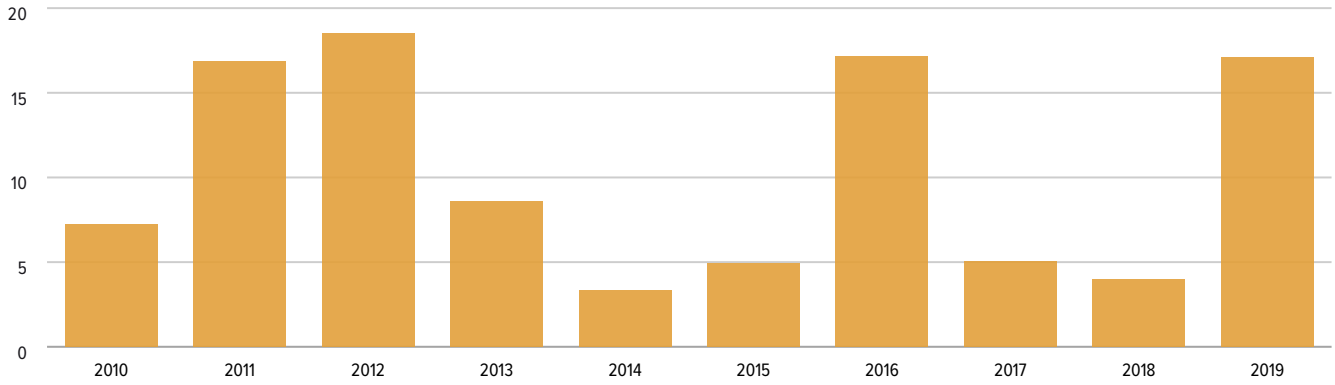
Rogelj et al., 2018

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

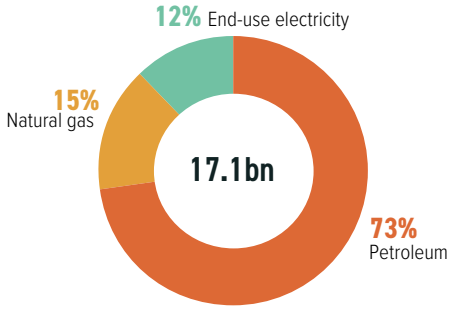
(USD billions)



OECD-IEA Fossil Fuel Support database, 2020

Fossil fuel subsidies by fuel type

USD in 2019



Over the past decade (2010-2019), Mexico's fossil fuel subsidies have oscillated considerably, reaching a value of USD 17.1bn in 2019. Over this period, most of the subsidies were directed to support the production and consumption of petroleum.

Comparable data is not available yet for 2020. However, according to the Energy Policy Tracker data, during 2020 Mexico pledged at least USD 3bn to fossil fuel energy as part of its energy-related funding commitments and COVID-19 economic response. The government support has been pledged in the form of a fiscal stimulus targeted at the state-owned enterprise Pemex; the stimulus aimed at reducing the tax on oil extraction to foster Pemex' investments.

Energy Policy Tracker, 2021; OECD-IEA Fossil Fuel Support database, 2020

Due to rounding, some graphs may sum to slightly above or below 100%

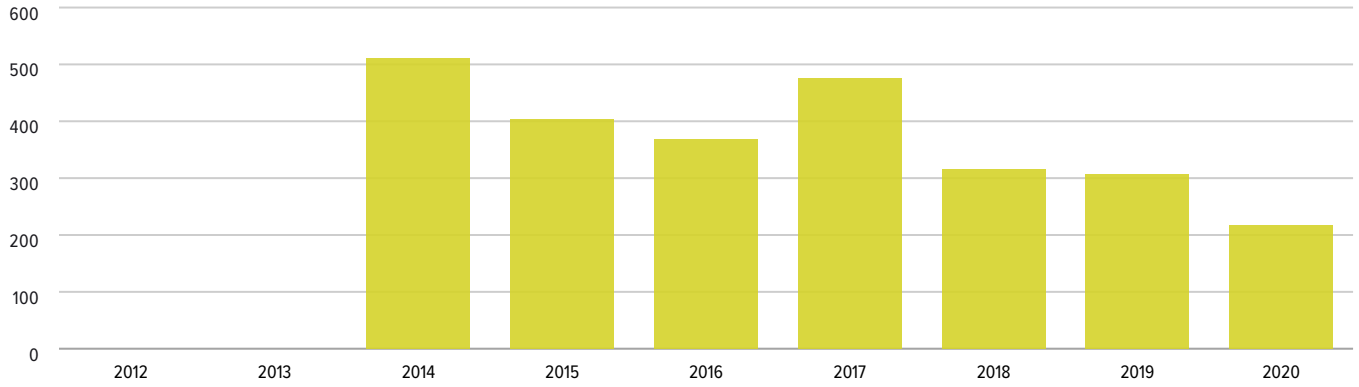
CORONAVIRUS RESPONSE AND RECOVERY

Under economic pressure from the COVID-19 pandemic, Mexico dismantled its national Fund for Climate Change in 2020, originally created in 2012 through its General Law on Climate Change. So far, the government has plans to direct only 1.1% of the total budget of the country towards activities to fight climate change for 2021. Of this small amount of public spending, 75% is designated to fund transport measures using natural gas, which will only undermine Mexico's emission mitigation efforts.

Greenpeace México, 2020; Almeida Lopez, 2020

Carbon pricing and revenue

(USD millions)



In 2014, Mexico introduced a national carbon tax, which generated USD 216m in revenue in 2020. This covers 46% of domestic emissions, with emissions priced at USD 3/tCO_2e. Natural gas products are excluded from the tax. 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 power, oil and gas and industrial sectors.

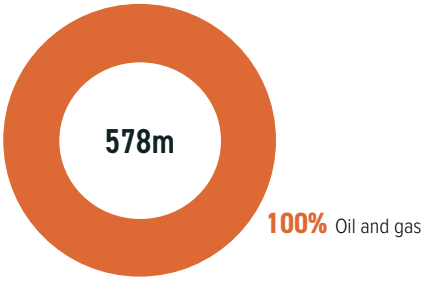
I4CE, 2021; Energy Policy Tracker, 2021

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 countries 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 fossil fuels

USD per annum (2018-19 average)



Between 2018 and 2019, Mexico provided an average of USD 578m per year in public finance for the oil and gas sector, mainly through Banco Nacional de Obras y Servicios Publicos (Banobras) and Banco National de Comercio Exterior (Bancomex). No evidence was found for public finance for coal. The most notable project financed was the Los Ramones Norte Gas Pipeline, located in Mexico, which received USD 223m each from Banobras, Bancomex and Nacional Financiera (Nafin).

Oil Change International, 2020

Due to rounding, some graphs may sum to slightly above or below 100%

Provision of international public support

Mexico is not listed in Annex II of the UNFCCC and is, therefore, not formally obliged to provide climate finance. It has, nevertheless, continued to provide international public finance to the Global Environment Facility (GEF) Trust Fund and, in 2015, supported the first resource mobilisation of the Green Climate Fund (USD 10m). While Mexico may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

FINANCIAL POLICY AND REGULATION

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.

In April 2020, the Financial System Stability Council (convened by the Secretariat of Finance and Public Credit (SHCP) and the Central Bank of Mexico (Banco de México)) launched **the Sustainable Finance Committee that will oversee improving the availability of data** through sustainable investment guides, indicators, recommendations and processes for the analysis and the management of climate and environmental risks.

In June 2021, Banco de México initiated the dialogue and presented the framework of **Mexico's finance solution Greening the Finance Sector**. It also highlighted the role of the Sustainable Finance Committee to structure the dialogue around mainstreaming the climate and environmental risks in financial strategies, establishing clear rules for companies and intermediaries, defining a national taxonomy on sustainable investments, and establishing an agenda to capitalise on the opportunities to transition towards a sustainable economy.

Banco de México also launched a report on Climate and Environmental Risks and Opportunities in Mexico's Financial System: From Diagnosis to Action in May 2020. It called upon Mexican financial institutions to incorporate environmental, social, and governance (ESG) factors into risk assessment, increase green finance flows to the economy, and define a national taxonomy for green and sustainable activities. **In June 2020, the Mexican stock exchange (Bolsa Mexicana de Valores, BMV) along with S&P launched the Total Mexico ESG Index, which will set a new benchmark for sustainability and investment.**

Secretariat of Finance and Public Credit, 2020; Biodiversity Finance Initiative, 2021; Green Finance Platform, 2020; S&P Global, 2020

Nationally Determined Contribution (NDC): Finance

Conditionality	Not applicable
Investment needs	Not specified
Actions	Not mentioned
International market mechanisms	No contribution from international credits for the achievement of the target

ENDNOTES

Where referenced, "Enerdata, 2021" refers to data provided in July 2021. For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2021

1 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.

2 '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) reporting tables data converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from LULUCF, which under the new IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

3 The Decarbonisation Ratings assess the current year and average of the most recent five years (where available) to take account of the different starting points of different G20 countries.

4 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 table below displays the criteria used to assess a country's policy performance.

5 The 1.5°C 'fair-share' ranges for 2030 are drawn from the CAT, which compiles a wide range of perspectives on what is considered fair, including considerations such as responsibility, capability, and equality. Countries with 1.5°C 'fair-share' ranges reaching below zero, are expected to achieve such strong reductions by domestic emissions reductions, supplemented by contributions to global emissions reduction efforts via, for example, international finance. On a global scale, negative emissions technologies are expected to play a role from the 2030s onwards, compensating for remaining positive emissions. In order to maintain comparability across all countries, this report harmonises all data with PRIMAP, 2021 dataset to 2018. However, note that Common Reporting Format (CRF) data is available for countries which have recently updated GHG inventories. Where countries submitted updated NDC targets before August 2021, these have been analysed and included.

6 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.

7 This indicator includes only direct energy-related emissions and process emissions (Scope 1) but not indirect emissions from electricity.

8 This indicator includes emissions from electricity (Scope 2) as well as direct energy-related emissions and process emissions (Scope 1).

On endnote 4.	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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