MEXICO

CLIMATE TRANSPARENCY REPORT COMPARING G20 CLIMATE ACTION AND RESPONSES TO THE COVID-19 CRISIS

Climate Transparency 2020

This country profile is part of the **Climate Transparency Report 2020**. Find the full report and other G20 country profiles at: www.climate-transparency.org

PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS BELOW G20 AVERAGE

Mexico's per capita greenhouse gas (GHG) emissions are below the G20 average. Total GHG emissions have increased by 63% since 1990, and are projected to rise further.

Data for 2017. Sources: CAT 2019; Gütschow et al., 2019; UN Department of Economic and Social Affairs Population Division 2020

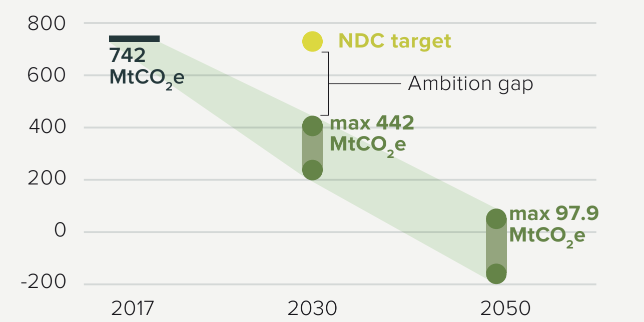
Note: Since 2000, Mexico has published six National Communications to the UNFCCC. As Mexico follows IPCC methodologies, some discrepancies arose when trying to match the data with PRIMAP methodology.

GHG emissions (incl. land use) per capita (tCO_2e/capita)[1]

NOT ON TRACK FOR A 1.5°C WORLD

To be within its 1.5°C 'fair-share' compatible range, Mexico needs to reduce its emissions to at least 442 $MtCO_2e$ by 2030 and 98 $MtCO_2e$ by 2050. Mexico's 2030 NDC would only limit its emissions to 755 $MtCO_2e$. All figures exclude land use emissions and are based on pre-COVID-19 projections.

Mexico 1.5°C 'fair-share' pathway ($MtCO_2e$/year)[1&2]



Source: Climate Action Tracker, 2020

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

CLIMATE FINANCE MECHANISMS

The climate finance mechanisms in Mexico, such as the Green Bond and the ETS under development, could leverage the opportunity for enhanced climate action if they orient their impact to comply with the Paris Agreement and support social development, the priority of the Mexican government.

REOPEN RENEWABLE ENERGY AUCTIONS

Mexico should reopen further renewable energy auctioning rounds with a just energy transition approach instead of recentralising the energy sector around fossil fuels. Strengthening local auctioning of subnational governments as a key mechanism can reinforce the electricity market, incentivising clean energy deployment and overcoming the regulatory barriers from the federal government.

REVISE NDC TO BE 1.5°C FAIR-SHARE COMPATIBLE

Mexico is in the process of revising its NDC which is on a 2°C to 3°C pathway considering a 'fair-share' of efforts between countries. This is an opportunity for Mexico to update its NDC to a level of ambition which would better align its NDC with a 1.5°C 'fair-share' compatible pathway.

RECENT DEVELOPMENTS

The Sectoral Program for Environment and Natural Resources published in July 2020 stated that "oil is a strategic resource to enhance sustainability and promote a socially inclusive energy transition" – Mexico is thus heading in the wrong direction. Mexico seeks to increase the use of oil for electricity generation, reinforce state-owned companies PEMEX and CFE, and increase investment in further fossil fuel exploration and extraction. In April 2020 the energy watchdog suspended operations of renewables as well as rolling back planned investments and renewable projects.

Local governments are leading the climate ambition by developing enhanced climate policy instruments and improved coordination efforts within the subnational level.

In September 2020, the Federal government presented the 2021 Fiscal Package as well as the Budget to the Congress. It focuses on continuing major infrastructure projects such as the Maya Train, new airport and Dos Bocas Refinery, but has little support for climate measures.

CORONAVIRUS RECOVERY

The COVID-19 pandemic has had an enormous impact on Mexico's economy and health system, and the GDP is projected to decrease up to 8% by the end of 2020. The recovery plan lacks detailed policies and green criteria, and it cuts the budget for environmental public programmes and policies. The government is prioritising fossil fuel electricity generation over renewable energy, adding market barriers for wind and solar power plants online, and prioritising its own oil-fired power plants. As a result, Mexico's energy emissions could increase.

References: Climate Action Tracker, 2020; IMF, 2020; Secretaria de Gobernacion, 2020

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 thumbs indicate assessment from a climate protection perspective.

Decarbonisation Ratings[4] 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

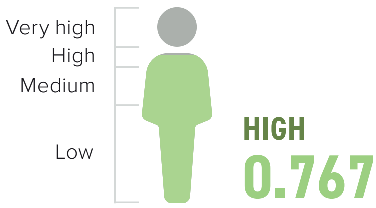
Policy Ratings[5] evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.

Low · Medium · High · Frontrunner

SOCIO-ECONOMIC CONTEXT

Human Development Index

The Human Development Index reflects life expectancy, level of education, and per capita income. Mexico ranks high, in the middle of the G20 range.

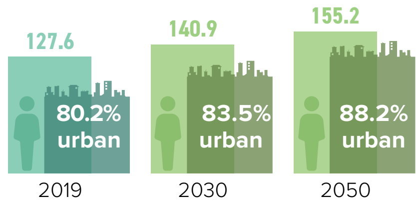


Data for 2018. Source: UNDP, 2019

Population and urbanisation projections

(in millions)

Mexico's population is expected to increase by about 21.8% by 2050 from 2019 with nine out of 10 people living in cities.



Sources: The World Bank, 2019; United Nations, 2018

Gross Domestic Product (GDP) per capita

(PPP constant 2015 international $)

Data for 2019. Sources: The World Bank, 2018

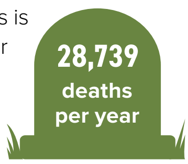
Death rate attributable to air pollution

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

0.3 MEXICO

0.1–1.1 G20 RANGE

Almost 29,000 people die in Mexico every year as a result of outdoor air pollution, causing stroke, heart disease, lung cancer and chronic respiratory diseases. Compared to total population, this is still one of the lower levels in the G20.



Data for 2016. Source: WHO, 2018

JUST TRANSITION

Social, economic and environmental risks are being generated as a result of the government's energy and climate decisions. Contrary to its environmental legal framework and international commitments, the government prioritises the production of fossil fuels and gasoline, restraining investment in clean and renewable energy. **Mexico is in the world's top 20 countries in terms of inequality. While the government has committed to tackle poverty and reduce inequality, the wellbeing of the most vulnerable, the poorest and indigenous communities are most affected by the lack of social components in decision-making and development planning.** Although both its NDC and LTS have mitigation and adaptation components that prioritise just transition, Mexico is not complying with the Paris Agreement and its energy decisions are focused on fossil fuel rather than on a decarbonised just transition.

References: Climate Transparency, 2019; Tornel, 2019; Villarreal and Tornel, 2017

1. 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.**

HIGH COST OF EXTREME WEATHER
On average, 126 fatalities and almost USD 3bn losses occur yearly due to extreme weather events.

SEVERE IMPACTS ON AGRICULTURE SECTOR
With global warming, society and its supporting sectors are increasingly exposed to severe impacts such as droughts and reduction in crop duration in the agricultural sector.

35°C
110 DAYS ABOVE 35°C
With a 3°C warming, Mexico would experience around 110 days per year when temperatures are above 35°C.

ADAPTATION NEEDS

Climate Risk Index

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

Annual weather-related fatalities

117 DEATHS

0.10 PER 100,000 INHABITANTS

High
Death rate
Low

RANKING 12th IN THE G20

Source: Based on Germanwatch, 2019

Annual average losses (USD mn PPP)

$ 3,002

0.17 PER UNIT GDP (%)

High
Losses
Low

RANKING 5th IN THE G20

Source: 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	High	High	Very high
		% of time in drought conditions	Medium	High	Very high
HEAT AND HEALTH		Heatwave frequency	Low	Medium	Very high
		Days above 35°C	High	Very high	Very high
AGRICULTURE	Maize	Reduction in crop duration	Low	High	Very high
		Hot spell frequency	Medium	Medium	Low
		Reduction in rainfall	Low	Very low	Very low

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

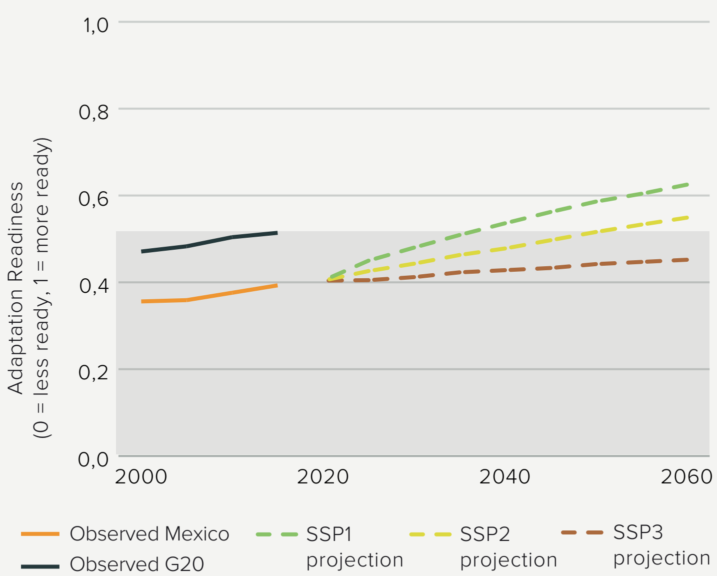
Note: These indicators are national scale results, weighted by area and based on global data sets. They are designed to allow comparison between regions and countries and therefore entail simplifications. They do not reflect local impacts within the country. Please see technical note for further information.

CORONAVIRUS RECOVERY
As a response to the health crisis, the government of Mexico promoted legal amendments to allocate around 2.2% of Mexico's GDP to create an Emergency Fund. The Fund aims to maintain the social aid to support the poorest households. However, neither a stimulus package nor a long-term green recovery plan has been announced. The federal government perceives infrastructure investment decisions like the Maya Train and the Dos Bocas Refinery as strategic to enhance job opportunities, tackle poverty and reduce inequality.

Adaptation readiness

The figure shows 2000-2015 observed data from the ND-GAIN Index overlaid with projected Shared Socioeconomic Pathways (SSPs) from 2015-2060.

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



Mexico scored well below the G20 average in 2015 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 SSP1, Mexico will only just exceed the G20's 2015 average score in 2040. Other measures, as represented by SSP2 and SSP3, will perpetuate its ranking below the G20 average in 2015, until 2050 and 2060 respectively.

The readiness component of the Index created by the Notre Dame Global Adaptation Initiative (ND-GAIN) encompasses social 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 possible futures. The three scenarios shown here in dotted lines are qualitatively described as a sustainable development-compatible scenario (SSP1), a middle-of-the-road (SSP2) and a 'Regional Rivalry' (SSP3) scenario. The shaded area delineates the G20 average in 2015 for easy reference.

Source: Andrijevic et al., 2020

ADAPTATION POLICIES

National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)													M&E 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 Comission but second approval is needed by the Regulatory Body of Federal Government and Treasury. As of mid-October 2020 this has not been shared with civil society.
Special Programme for Climate Change (PECC)	2020														

Nationally Determined Contribution (NDC): Adaptation

Targets	Actions
Not mentioned	Actions specified in the following sectors: water, biodiversity and ecosystems, forestry, agriculture, health, infrastructure

2. 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

INCREASED EMISSIONS

Mexico's GHG emissions have **increased by 63% (1990-2017)** and the government's climate targets for 2030 (-22% below baseline provided in NDC) and 2050 (-50% below 2000 levels) are **not in line with a 1.5°C pathway.**

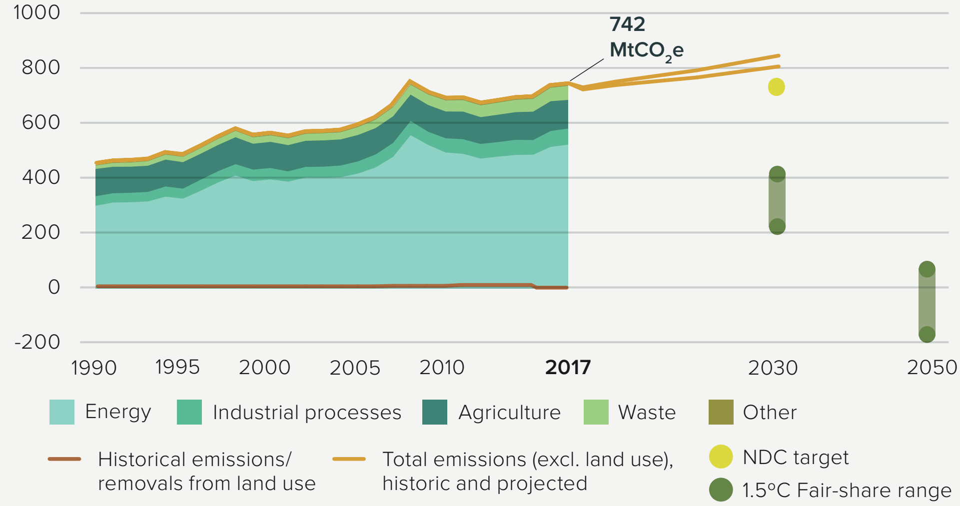
1.5°C COMPATIBILITY

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.

Source: Rogelj et al., 2018

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

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



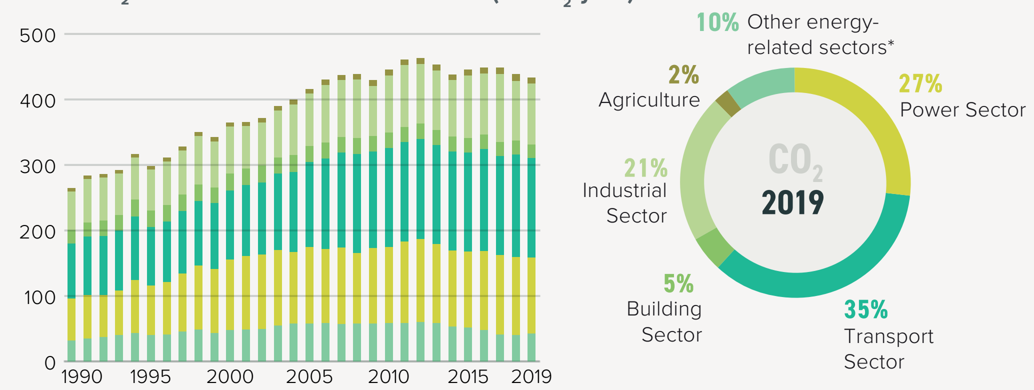
Sources: Gütschow et al., 2019; Climate Action Tracker 2019

Mexico's emissions (excl. land use) have **increased by 63.2% between 1990 and 2017 and are projected to continue increase until at least 2030**. Mexico will need to scale up climate action to meet its NDC, with even more effort required to become 1.5°C 'fair-share' compatible.

Note: Since 2000, Mexico has published six National Communications to the UNFCCC, following the IPCC guidelines. The emissions are based on Mexico's national inventory data (INECC) and are converted to AR4 for comparability between countries.

Energy-related CO_2 emissions by sector

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



* '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%.

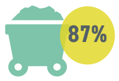
The largest driver of overall GHG emissions are CO_2 emissions from fuel combustion. The sectoral breakdown for CO_2 emissions has remained relatively constant over the last decade, while CO_2 emissions overall have slightly decreased in the past two years. Transport (35%) and power and heat (27%) are the largest contributors.

Source: Enerdata, 2020

CORONAVIRUS RECOVERY The government of Mexico has not defined a green economic recovery package. The federal government is still promoting fossil fuel infrastructure while rolling back renewable energy projects as well as the investments from the private sector. This decision is contrary to complying with the Paris Agreement temperature limit, the mandates of the General Law of Climate Change and the clean energy goals established in the Energy Transition Law of Mexico.

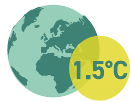
References: Cámara de Diputados, 2020; LGCC, 2012; LTE, 2015.

ENERGY OVERVIEW



OF MEXICO'S ENERGY MIX IS FOSSIL FUELS

Fossil fuels still make up 87% of Mexico's energy mix (counting power, heat, transport fuels, etc), which is **above the G20 average**. Despite some increase in renewable energy since 2011, the overall carbon intensity of the energy mix has hardly changed.



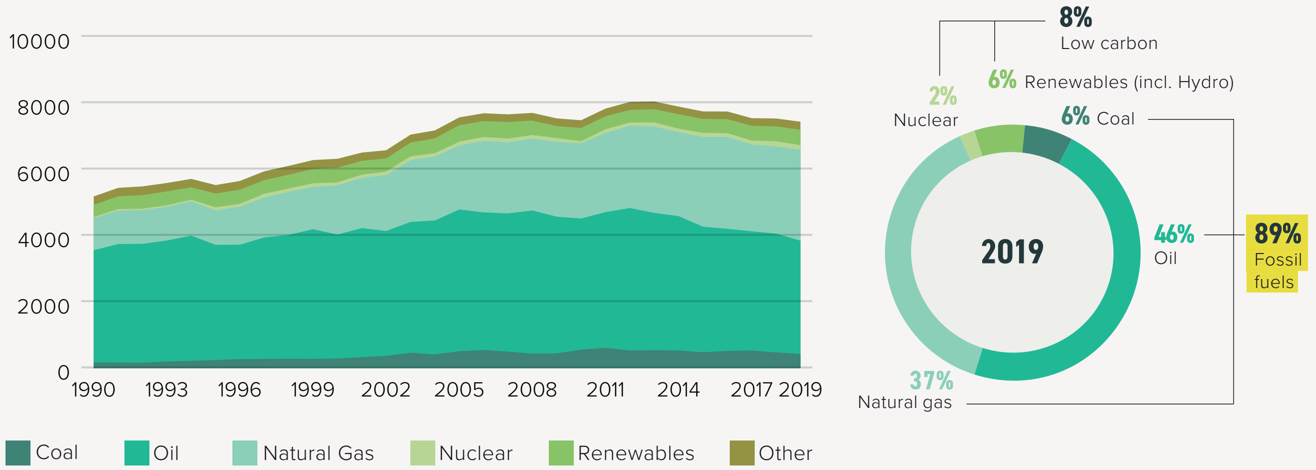
COMPATIBILITY

The share of **fossil fuels in the global primary energy mix needs to fall to 67% by 2030 and to 33% by 2050** (and to substantially lower levels without Carbon Capture and Storage).

Source: Rogelj et al., 2018

Energy Mix

Total primary energy supply (PJ)



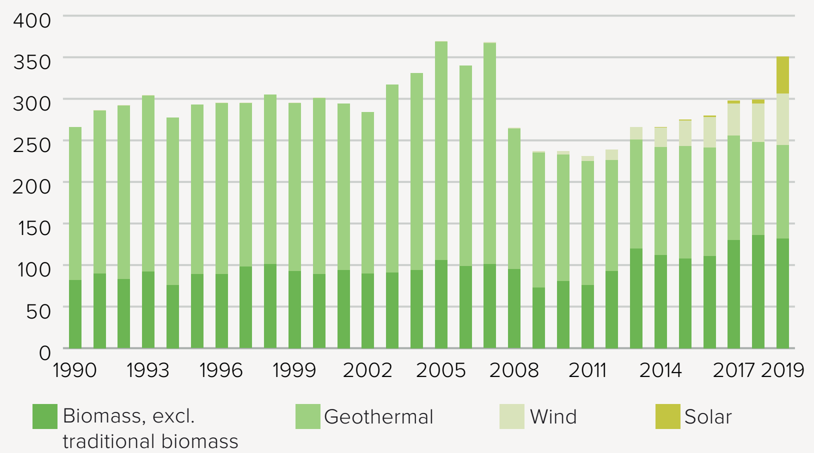
Source: Enerdata, 2020

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

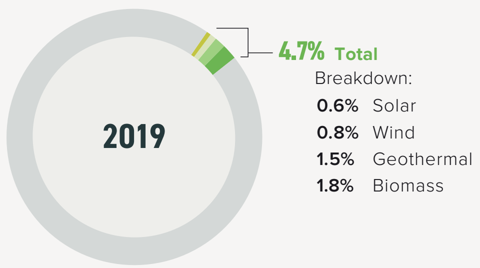
This graph shows the fuel mix for all energy supply, including energy used for electricity generation, heating, cooking, and transport fuels. Fossil fuels (oil, coal and gas) make up 87% of the Mexican energy mix.

Solar, Wind, Geothermal, and Biomass Development

Total primary energy supply (TPES) from solar, wind, geothermal and biomass (PJ)



Solar, wind, geothermal and biomass account for 4.7% of Mexico's energy supply



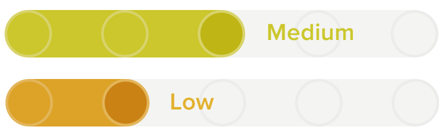
Source: Enerdata, 2020

Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.
Due to rounding, some graphs may sum to slightly above or below 100%.

Decarbonisation rating: RE share of TPES compared to other G20 countries

5-year trend (2014-2019):

Current year (2019):

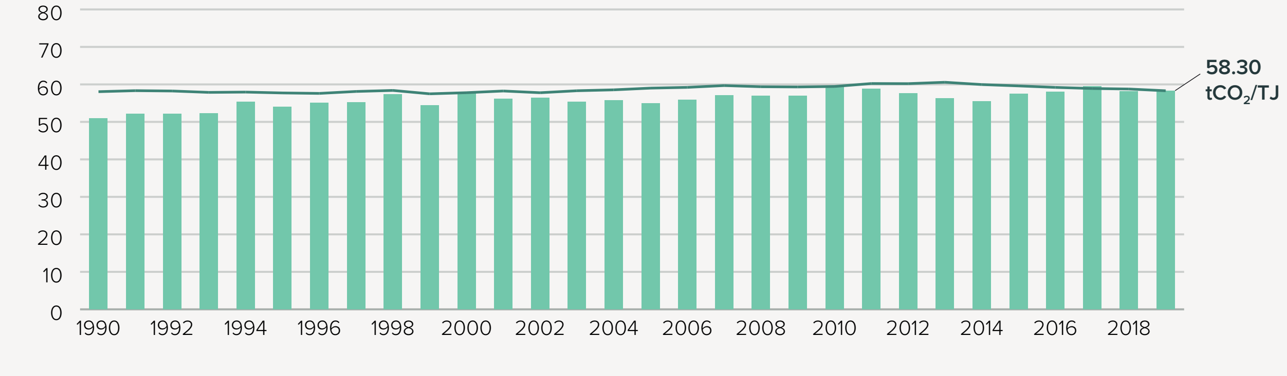


Source: own evaluation

Solar, wind, geothermal and biomass account for 4.7% of Mexico 's energy supply – the G20 average is only 6.2%. The share in total energy supply has increased by around 35.3% in the last five years in Mexico (2015-2019), a higher increase than the G20 average (+28,1%, 2015-2019). Bioenergy (for electricity and heat) makes up the largest share.

Carbon Intensity of the Energy Sector

Tonnes of CO_2 per unit of total primary energy supply (tCO_2/TJ)



Source: Enerdata, 2020

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

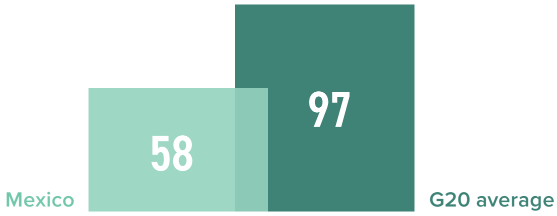
5-year trend (2014-2019): Very low

Current year (2019): Medium

Carbon intensity shows how much CO_2 is emitted per unit of energy supply. In Mexico, carbon intensity has remained almost constant at approximately 58 tCO_2 /TJ over the last five years and is around the G20 average. This medium level reflects the continuously high share of fossil fuels in the energy mix.

Energy supply per capita

(GJ/capita)



Source: Enerdata, 2020; The World Bank, 2019

TPES per capita (GJ/capita): 5-year trend (2014-2019)

-11% Mexico | +1.9% G20 average

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 is with 58 GJ/capita, well below the G20 average, but is decreasing (-11%, 2014-2019) in contrast to the increasing G20 average (+2%).

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

5-year trend (2014-2019): Very high

Current year (2019): High

Source: own evaluation

Energy intensity of the economy

(TJ/PPP USD2015 millions)

Data for 2018. Source: Enerdata, 2020

Energy intensity of the economy: 5-year trend (2013-2018)

-18% Mexico | -11.6% G20 average

This indicator quantifies how much energy is used for each unit of GDP, which is closely related to the level of industrialisation, efficiency, climatic conditions and geography.

Mexico's energy intensity is one of the **lowest in the G20 and has decreased more** (-18%, 2013-2018) than the G20 average (-12%, 2013-2018).

Decarbonisation rating: energy intensity compared to other G20 countries

5-year trend (2013-2018): High

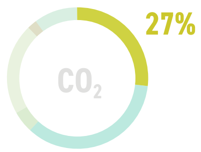
Current year (2018): Very high

Source: own evaluation

POWER SECTOR

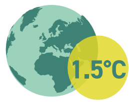
Emissions from energy used to make electricity and heat

In 2019, 79% of Mexico's electricity comes from fossil fuels – this is one of the highest levels in the G20. Renewable power is growing slower than the G20 average. In order to stay below 1.5°C, Mexico needs to phase out coal power by 2030, and accelerate the uptake of renewables. Instead, it has used the COVID-19 pandemic as justification to adopt stringent rules that make it harder to bring solar and wind power plants online.



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

Source: Enerdata, 2020



Coal and decarbonisation

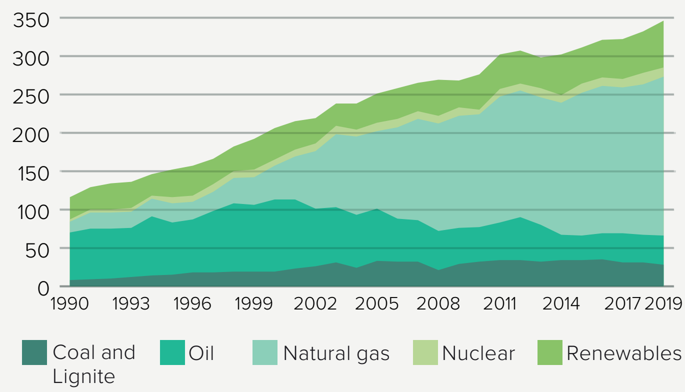
Worldwide, coal use for power generation needs to peak by 2020, and between 2030 and 2040, **all the regions of the world need to phase out coal-fired power generation**. Electricity generation has to be decarbonised before 2050, with renewable energy the most promising alternative.

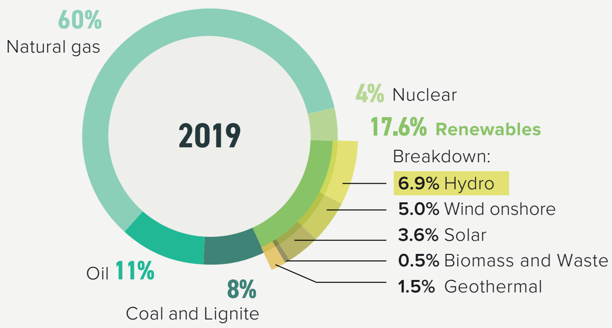
Sources: Rogelj et al., 2018; Climate Analytics, 2016; Climate Analytics, 2019

STATUS OF DECARBONISATION

Electricity mix

Gross power generation (TWh)





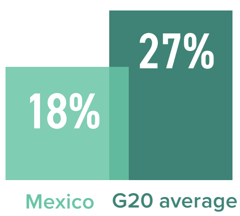
Source: Enerdata, 2020

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

In 2019, fossil fuels, mainly gas, made up 79% of Mexico's electricity generation – one of the highest levels in the G20. Mexico produces 18% of electricity from renewables, which is below the G20 average (27%), and the share has increased (+3%, 2014-2019) less than the G20 average (+20%).

Share of renewables in power generation

(incl. large hydro)

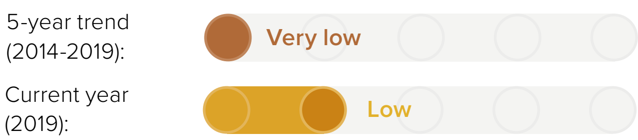


Source: Enerdata, 2020

Share of renewables in power generation: 5-year trend (2014-2019)

+3% Mexico | +19.5% G20 average

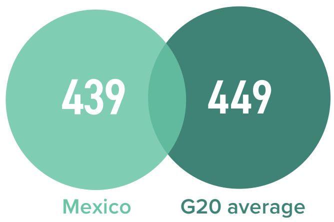
Decarbonisation rating: share of renewables compared to other G20 countries



Source: own evaluation

Emissions intensity of the power sector

Country vs G20 average (gCO_2/kWh)



Source: Enerdata 2020

Emissions intensity: 5-year trend (2014-2019)

-3.7%
Mexico

-10.3%
G20 average

Mexico emits 439gCO_2 for each kilowatt hour of electricity it uses, which is slightly below the G20 average (449gCO_2/kWh) but still high. Mexico's emissions intensity has dropped only marginally in the past five years, as oil has primarily been replaced with gas and not renewables.

Decarbonisation rating: emissions intensity compared to other G20 countries

5-year trend (2014-2019): Low

Current year (2019): Medium

Source: own evaluation

POLICY ASSESSMENT

Renewable energy in the power sector

Low

The 2015 Energy Transition law has the aspirational goal to increase the share of renewables in the power mix to 35% by 2024 and to 50% by 2050. In the National Development Plan for the Electricity Sector 2019-2033, **the share of renewable energy in 2024 is 35%, but the plan does not outline how this goal will be achieved.** Since 2019, the federal government has rolled back new renewable energy projects as well as the investments from the private sector while decisively supporting fossil fuels.

References: own evaluation

Coal phase-out in the power sector

Low

Mexico joined the Powering Past Coal Alliance in 2017 at COP23; however, it still plans to increase its coal capacity. **The federal government has not defined a plan for a coal phase-out.** The government has announced the purchase of 2 million tonnes of coal between July and December 2021 **which will affect solar and wind projects ready to go online.** The government has decided to modernise some coal power plants rather than retiring them as originally planned.

References: own evaluation, based on Iniciativa Climática de México, 2020.

TRANSPORT SECTOR

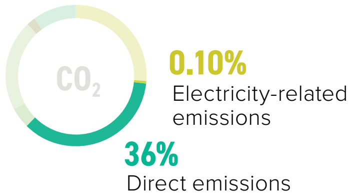
Emissions from energy used to transport people and goods

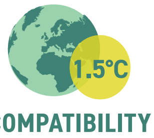
Mexico's transport sector is dominated by fossil fuels, and in order to stay within a 1.5°C limit, passenger and freight transport need to be decarbonised. In 2018 electric vehicles (EVs) made up only 0.14% of car sales; nonetheless, the government has stated a goal of having all LDVs sold by 2050 be EVs. A 100% EV by 2040 target is needed in almost all countries for the world to be on a 1.5° pathway.

Sources: IEA, 2019; Climate Transparency, 2020; Dirección de Políticas de Mitigación al Cambio Climático, 2019

Share in energy-related CO_2 emissions from transport sector

Source: Enerdata, 2020





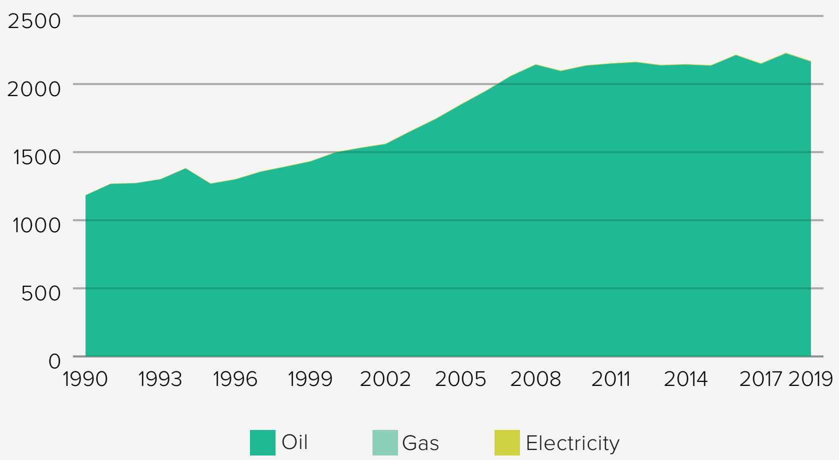
The share of low-carbon fuels in the transport fuel mix must increase to about 60% by 2050.

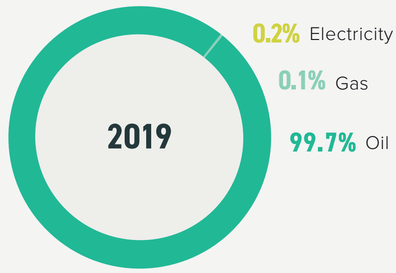
Source: Rogelj et al., 2018

STATUS OF DECARBONISATION

Transport energy mix

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





Source: Enerdata, 2020

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

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

Transport emissions per capita

excl. aviation (tCO_2/capita)

Data for 2018. Sources: Enerdata, 2020; The World Bank, 2019

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

+4% Mexico

+5.5% G20 average

Decarbonisation rating: transport emissions compared to other G20 countries

Source: own evaluation

Aviation emissions per capita[6]

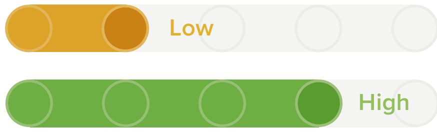
(tCO_2/capita)

Data for 2017. Source: Enerdata, 2020

Aviation emissions: 5-year trend (2012-2017)

+29.4% Mexico | +18.7% G20 average

Decarbonisation rating: aviation emissions compared to other G20 countries



Source: own evaluation

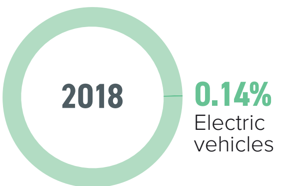
Motorisation rate

278 VEHICLES PER 1,000 INHABITANTS (2015)

Around 30% of the population has a car.

Data for 2015. Source: Vieweg et al., 2018

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



Source: IEA, 2019

Passenger transport

(modal split in % of passenger-km)

No data available

Freight transport

(modal split in % of tonne-km)

Data for 2017. Source: Vieweg et al., 2018

POLICY ASSESSMENT

Phase out fossil fuel cars

The light passenger and heavy-duty vehicles are not only key contributors of GHG emissions but are also the primary source of outdoor air pollution in Mexican cities. Thus, electromobility is a promising route to achieve mitigation targets and reduce health impacts. At the end of 2019, the government announced a National Strategy on Electric Mobility would be released early 2020; the aim thereof would be to have all LDVs sold in 2050 electric LDVs. As of October 2020, it has however not yet been released. Achieving mitigation targets requires an accelerated electromobility strategy complemented with improved connectivity and access to public transport.

Reference: own evaluation, based on Climate Transparency, 2020; Dirección de Políticas de Mitigación al Cambio Climático, 2019.

Phase out fossil fuel heavy-duty vehicles

Starting 1 January 2021, heavy-duty vehicles (HDVs) emissions standards will enter into force. These regulations require that all new HDVs sold in Mexico meet the best-in-class, filter-based standards, equivalent to those currently in place in the rest of North America and the European Union. However, the country still lacks a strategy to decarbonise freight transport.

Reference: own evaluation, based on Blumberg, 2018; Climate Action Tracker, 2020

Modal shift in (ground) transport

The government of Mexico needs to upgrade and improve its regulatory framework and enable the conditions for institutional and policy coordination to reduce transport sector's greenhouse gas emissions and health impacts. Few cities have made relevant progress implementing active mobility projects. There is also no longer-term strategy for promoting modal shift and the Sustainable Urban Mobility Strategy has been underfunded in recent years.

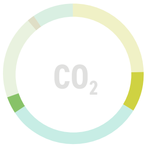
Reference: own evaluation, based on Climate Transparency, 2020

BUILDING SECTOR

Emissions from energy used to build, heat and cool buildings

Mexico's buildings emissions – including heating, cooking and electricity use – make up close to 7% of total CO_2 emissions. Per capita, building-related emissions are well below the G20 average, but Mexico needs to reduce these emissions further to be in line with a 1.5°C compatible pathway. Residential and non-residential buildings consume approximately 885 GWh per annum, rendering the building sector as the main consumer of electricity in Mexico.

Building emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (grid-electricity for air conditioning, appliances, etc.



Source: Enerdata, 2020

1.5°C COMPATIBILITY

Global emissions from buildings need to be halved by 2030, and be 80-85% below 2010 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification in conjunction with complete decarbonisation of the power sector.

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION

Building emissions per capita

(incl. indirect emissions) (tCO_2/capita)

Source: Enerdata, 2020

Building-related emissions per capita are less than the G20 average. **In contrast to the G20 average, Mexico has managed to decrease the level by 6.35% (2014-2019).**

Source: Enerdata, 2020

Building emissions: 5-year trend (2014-2019)

-6.35% Mexico

+1.82% G20 average

Decarbonisation rating: building emissions compared to other G20 countries

5-year trend (2014-2019):	High
Current year (2019):	Very high

Source: own evaluation

Residential buildings

Energy use per m²

0.17 GJ PER M²

Commercial and public buildings

Energy use per m²

0.15 GJ PER M²

Building emissions are largely driven by how much energy is used in heating, cooling, lighting, household appliances, etc. **In Mexico, energy use per m² is at the lower end of the range of the G20 countries.**

Source: Castro-Alvarez et al., 2018

POLICY ASSESSMENT

Near zero energy new buildings

High

In 2017, the government presented a roadmap for reducing energy consumption by 35% in the building sector through energy efficiency measures, and for constructing only near-zero energy buildings by 2050 (2025 would be 1.5°C 'fair-share' compatible). The roadmap also envisages that by 2030 all states will enforce an energy building code. There is, however, no further development to be noted in this sector since then. In 2020, new targets have been defined in terms of energy efficiency with the goal of an annual rate of 3.7% reduction in energy consumption between 2031-2050.

Reference: own evaluation, based on Secretaria de Energia, 2020

Renovation of existing buildings

Low

Mexico does not have an energy retrofitting strategy for existing buildings. A 2019 energy efficiency programme covers only public buildings. Building envelope standards are mandatory for new buildings and retrofit. However, more stringent mechanisms need to be designed to guarantee compliance.

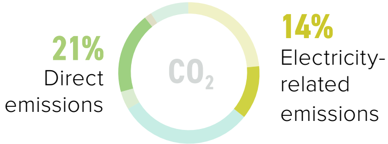
Reference: own evaluation

INDUSTRY SECTOR

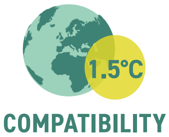
Emissions from energy in the industrial sector

Industry-related direct emissions make up just over a fifth of total CO_2 emissions in Mexico. Mexico has only managed to reduce emissions from this sector slightly.

Share in energy-related CO_2 emissions from industrial sector



Source: Enerdata, 2020



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

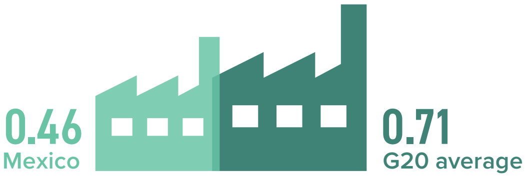
Source: Rogelj et al., 2018

Note: Since 2000, Mexico has published six National Communications to the UNFCCC. As Mexico follows IPCC methodologies, some discrepancies arose when comparing data derived with the PRIMAP methodology.

STATUS OF DECARBONISATION

Industry emissions intensity[7]

(tCO_2e/USD2015 GVA)

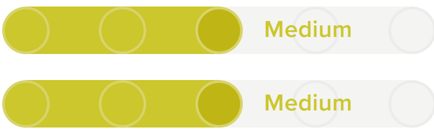


Data for 2016. Sources: Gütschow et al., 2019; Enerdata, 2020

Industry emissions: 5-year trend (2011-2016)

-10% Mexico | -12% G20 average

Decarbonisation rating: emissions intensity of industry compared to other G20 countries



Source: own evaluation

Carbon intensity of cement production[8]

($kgCO_2$/tonne product)

While Mexico's cement production is more efficient than the global average, it is still a significant source of absolute emissions.

Data for 2016. Sources: Climate Action Tracker, 2020; CAT Decarbonisation Data Portal, 2020

Carbon intensity of steel production[8]

($kgCO_2$/tonne product)

Data for 2016. Source: World Steel Association 2018

POLICY ASSESSMENT

Energy Efficiency

Most of Mexico's improvement in overall energy efficiency occurred in the industry sector with recently mandated periodic energy audits and the enforcement of on-site energy managers in large industrial facilities.

Source: own evaluation

LAND USE SECTOR

Emissions from changes in the use of the land

NET SINK OF EMISSIONS

In order to stay within the 1.5°C limit, **Mexico needs to make the land use and forest sector a net sink of emissions**, e.g. by halting the expansion of farmland, enhancing conservation, preventing wild fires, and creating new forests.

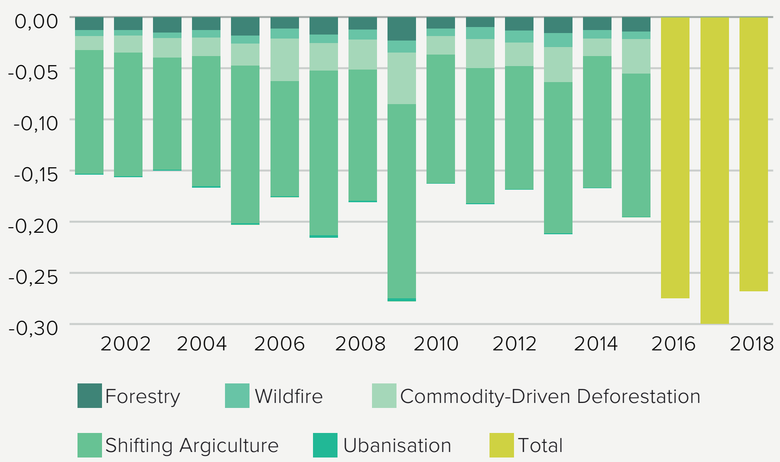
1.5°C COMPATIBILITY

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

Source: Rogelj et al., 2018

Global tree-cover loss

Gross tree-cover loss by dominant driver (million hectares)



This indicator covers only gross tree-cover loss and does not take tree-cover gain into account. It is thus not possible to deduce from this indicator the climate impact of the forest sector. 2000 tree cover extent – >30% tree canopy.

Source: Global Forest Watch, 2019

From 2001 to 2018, Mexico lost 3.46 Mha of tree cover. This does not take tree-cover gain into account.

POLICY ASSESSMENT

Target for net-zero deforestation

High

“Sembrando Vida”, a social development programme supporting rural people to establish agroforestry production systems, began in 2019. It is promoted as a LULUCF sector mitigation measure. However, no monitoring, evaluation or carbon-flow assessments have been conducted and concerns about deforestation effects persist. **From 2018 to 2019 the environmental sector, including the National Forest Commission and the Natural Protected Areas Commission, had a budget cut of 20.6% and an additional 3.7% budget so far in 2020.**

Reference: own evaluation, based on Climate Action Tracker 2019; Gobierno de Mexico, 2019; Secretaria de Gobernacion, 2018, 2019.

AGRICULTURE SECTOR

Emissions from agriculture

DIETARY SHIFTS ARE NEEDED

Mexico’s agricultural emissions are mainly from digestive processes in animals and livestock manure. A 1.5°C ‘fair-share’ pathway requires important dietary shifts, increased organic farming and less fertiliser use, increased bio-fertilisers, and improvements on livestock manure management.

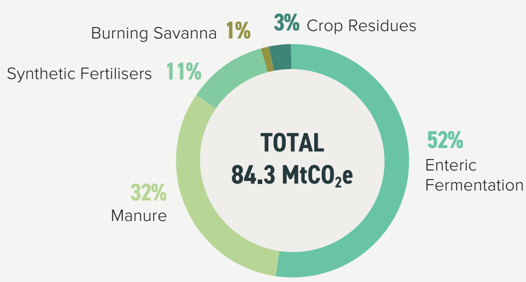
Source: INECC, 2018

1.5°C COMPATIBILITY

Methane emissions (mainly enteric fermentation) need to decline by 10% by 2030 and to 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).

Source: Rogelj et al., 2018

Emissions from agriculture (excluding energy)



Data for 2017. Source: FAO, 2019

In Mexico, the largest sources of GHG emissions in the agricultural sector are **digestive processes in animals (enteric fermentation), livestock manure and the use of synthetic fertilisers.** A shift to organic farming, more efficient use of fertilisers and dietary changes can help reduce emissions.

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 (NDC) submitted by September 2020 is not sufficient and will lead to a warming of 2.7°C by the end of the century. This highlights the urgent need for all countries to submit more ambitious targets by 2020, as they agreed in 2015, and to urgently strengthen their climate action to align to the Paris Agreement's temperature goal.

AMBITION: 2030 TARGETS

Nationally Determined Contribution (NDC): Mitigation

Targets
To unconditionally reduce 25% of GHG and short-lived climate pollutant emissions below business-as-usual by 2030. This commitment implies a reduction of 22% of GHG and a reduction of 51% of black carbon. Net emissions are to peak starting from 2026, and emissions intensity per unit of GDP will reduce by around 40% from 2013 to 2030.

Actions
Actions specified in the following sectors: energy, transport, urban, agriculture and forestry.

Climate Action Tracker (CAT) evaluation of NDC and actions

	Critically Insufficient
	Highly Insufficient
●	Insufficient
	2°C Compatible
	1.5°C Compatible
	Role Model

NDCs rated "insufficient" are in the least stringent part of a country's 'fair-share' range and not consistent with holding warming below 2°C, let alone with the Paris Agreement's stronger 1.5°C limit. If all government NDCs were in this range, warming would reach over 2°C and up to 3°C.

Mexico's emissions are on a worrying upward trend, mainly due to decisions that favour fossil fuel use, especially the continued investment in coal. It has also rolled back its support for renewable energy, which could provide clean and reliable power cost-effectively.

Evaluation as at October 2020, based on country's NDC. Source: Climate Action Tracker

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. While the Annex is only binding from the second NDC onwards, countries are "strongly encouraged" to apply it to updated NDCs, due in 2020.

NDC Transparency Check recommendations

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

To ensure clarity, transparency and understanding, it is recommended that Mexico provides additional detailed information in the upcoming NDC Update (compared to the existing NDC), including:

- Provide sources, assumptions and methodological approach of business-as-usual (BAU) projections
- State timeframes, including the period of implementation
- Define the expected year of the first and subsequent review and update, as appropriate, at regular intervals

AMBITION: LONG-TERM STRATEGIES

Status	Submitted to UNFCCC in 2016, based on 2013 National Climate Change Strategy
2050 target	-50% from 2000 levels
Interim steps	–
Sectoral targets	–
Net-zero target	–

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.

The 2016 long-term strategy has no measurable indicators and therefore is not a progression from the 2013 strategy. The 2018 General Law for Climate Change (GLCC) mandated the government to develop a 2050 mitigation roadmap with sectoral mitigation targets for the short-, mid- and long-term. Although the GLCC contains some progressive principles, the federal government has yet to comply with its mandate by releasing a decarbonisation roadmap.

3. 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.

USD 17 BILLION FOSSIL FUEL SUBSIDIES

Mexico spent USD 17bn on fossil fuel subsidies in 2019, almost completely on petroleum. The country's carbon pricing scheme generates only a fraction of this amount in revenues.

1.5°C COMPATIBILITY

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

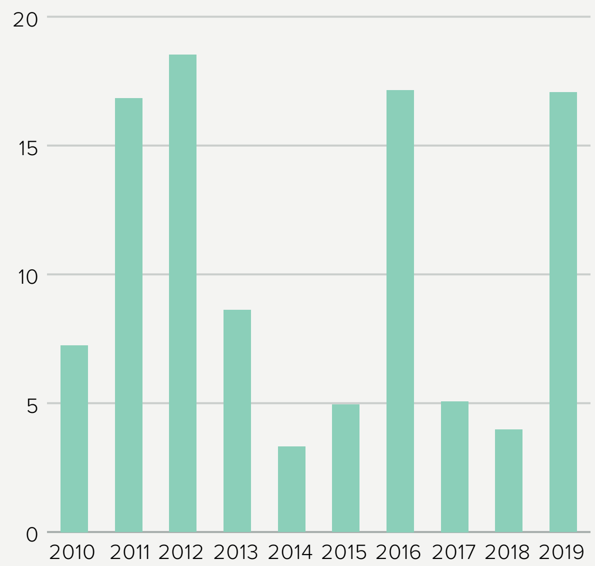
Source: Rogelj et al., 2018

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

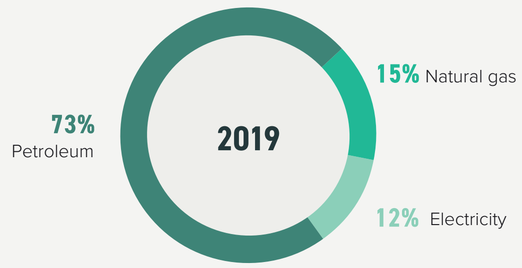
Mexico Fossil fuel subsidies (USD billions)



Source: OECD-IEA Fossil Fuel Support database, 2020

Fossil Fuel Subsidies by fuel type

Subsidies by fuel type



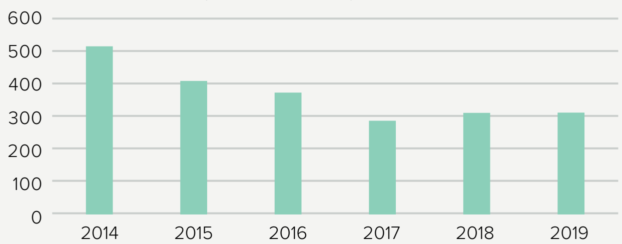
Source: OECD-IEA Fossil Fuel Support database, 2020
Due to rounding, some graphs may sum to slightly above or below 100%.

In 2019, Mexico's fossil fuel subsidies totalled USD 17.1bn (compared to USD 7.2bn in 2010 and fluctuating greatly over the last decade). 75% of the subsidies quantified were for the production of fossil fuels, with the remainder going to their consumption, and the majority of subsidies were for petroleum (USD 12.5bn), followed by natural gas (USD 2.6bn) and fossil fuel-based electricity (USD 2bn). The largest subsidies were directed to the two main state-owned enterprises, with USD 3.8bn invested to absorb part of the oil company PEMEX's debt and USD 2bn direct transfer by the federal government to the electricity utility CFE to cover part of the electricity tariff.

Carbon Pricing and Revenue

In 2014, Mexico introduced a national carbon tax, which generated USD 307m in revenues in 2019. This covers 46% of domestic emissions, with emissions priced at USD 3/tCO_2, but excludes natural gas products. On 1 January 2020, the pilot phase of Mexico's national carbon market started; the carbon market represents 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 308 installations accounting for 37% of national emissions and including the power, oil and gas and industrial sectors. The pilot phase was not intended to create important economic effects, but rather focused on building capacity among private sector representatives.

Carbon revenues (USD millions)



Sources: I4CE, 2019; OECD, 2018

CORONAVIRUS RECOVERY

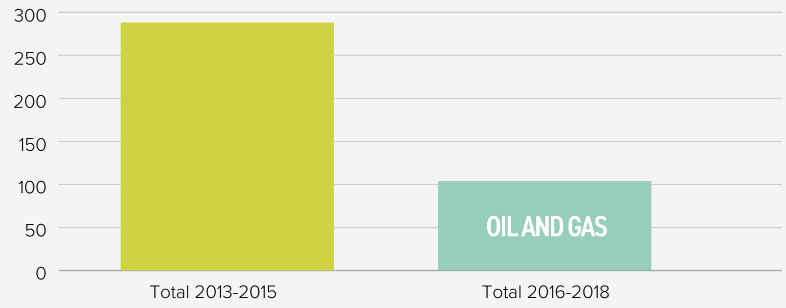
No fiscal measure nor stimulus package has been announced from federal government to recover from COVID-19. Few states and municipalities have implemented their own policy measures without concrete federal guidelines.

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

Public finance provided to fossil fuels (in USD millions)



The database used to estimate public finance for fossil fuels is a bottom-up database, based on information that is accessible through various online sources and is, therefore, incomplete.

Source: Oil Change International, 2020

Between 2016 and 2018, Mexico provided an average of USD 104m per year in public finance for the oil and gas sector. The figures compare favourably with the previous period 2013-2015, when an average of USD 288m per year is estimated to have been directed from public finance institutions to finance oil and gas projects. Key elements that reveal the plans to increase the use of gas in the generation of electricity are found in the proposal for the Budget of Expenditures of the Federation for the 2020 Fiscal Year, presented on 8 September 2019. The transportation of natural gas is awarded MXN 40.8m of the MXN 55.6m that is allocated in Annex 16, which is the only area where funds are allocated to adaptation and mitigation of the effects of climate change. In other words approximately 73% of the climate change budget going to transport natural gas.

Reference: Gaceta Parlementaria, 2019

Provision of international public support

(annual average 2017 and 2018)

Climate finance contributions are sourced from Party reporting to the UNFCCC.

Bilateral, regional and other channels

No data available

Theme of support:

No data available

Multilateral climate finance contributions

No data available

Theme of support:

No data available

Core / General Contributions

No data available

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.

Category	Instruments	Objective	Under Discussion/ implementation		None identified	
Green Financial Principles	n/a	This indicates political will and awareness of climate change impacts, showing where there is a general discussion about the need for aligning prudential and climate change objectives in the national financial architecture.	●			
			Mandatory	Voluntary	Under Discussion/ implementation	None identified
Enhanced supervisory review, risk disclosure and market discipline	Climate risk disclosure requirements	Disclose the climate-related risks to which financial institutions are exposed				●
	Climate-related risk assessment and climate stress-test	Evaluate the resilience of the financial sector to climate shocks		●		
Enhanced capital and liquidity requirements	Liquidity instruments	Mitigate and prevent market illiquidity and maturity mismatch				●
	Lending limits	Limit the concentration of carbon-intensive exposures				●
		Incentivise low carbon-intensive exposures				●
	Differentiated reserve requirements	Limit misaligned incentives and channel credit to green sectors				●

Mexico is a founding member of the Network for Greening the Financial System (NGFS) and has led efforts to establish inclusive green growth as a priority area for the G20 development agenda under the Mexican G20 Presidency in 2012 (a theme which led to the launch of the GreenInvest initiative in 2015). **Domestically, the ABM (Mexican Banking Association) has led a voluntary industry approach to sustainable banking in Mexico through the development of a 'Sustainability Protocol', which has been signed by 19 banks, while Mexico's national stock exchange, Bolsa Mexicana, committed in 2016 to create voluntary ESG (environmental, social and governance) reporting guidance for issuers.** In 2018, the Climate Finance Advisory Group (an independent organism associated with the Mexican Stock Exchange) released the Green Bond Principles MX, a series of principles that establish common guidelines among green bond issuers in the Mexican market. In 2019, the Climate Finance Advisory Group also became a member of UNEP's International Network of Financial Centres for Sustainability.

Nationally Determined Contribution (NDC): Finance

Conditionality	NDC not conditional on international financial support
Investment needs	Not specified
Actions	Not mentioned
International market mechanisms	No contribution from international credits for the achievement of the target

ENDNOTES

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/g20report2020

1 '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 Land use, land use change and forestry (LULUCF), which under the new IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

2 The 1.5°C 'fair-share' ranges for 2030 and 2050 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, particularly between 2030 and 2050, 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. The CAT's evaluation of NDCs shows the resulting temperature outcomes if all other governments were to put forward emissions reduction commitments with the same relative ambition level.

3 In order to maintain comparability across all countries, this report utilises the PRIMAP year of 2017. However, note that Common Reporting Format (CRF) data is available for countries which have recently updated GHG inventories.

4 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.

5 The selection of policies rated and the assessment of 1.5°C compatibility are informed by the Paris Agreement, the IPCC's 2018 SR15 and the Climate Action Tracker (2016). The table below displays the criteria used to assess a country's policy performance.

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 5.	Low	Medium	High	Frontrunner
Renewable energy in power sector	No policy 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 target or policy 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 policy 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 based light-duty vehicles by 2035 worldwide
Phase out fossil fuel heavy-duty vehicles	No policy	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	0-49% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	50-79% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	80-89% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	Over 90% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard
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 policy or incentive 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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ABOUT CLIMATE TRANSPARENCY

Climate Transparency

For more information on the country profile for Mexico, please contact:

Iniciativa Climática de México

Jorge Villarreal Padilla, jorge.villarreal@iniciativaclimatica.org or

Mariana Gutiérrez Grados, mariana.gutierrez@iniciativaclimatica.org

PARTNERS

CENTRO CLIMA – Center for Integrated Studies on Climate Change and the Environment - COPPE / UFRJ
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