

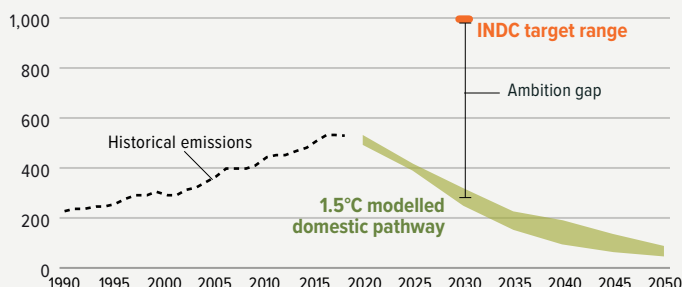


NOT ON TRACK FOR A 1.5°C WORLD

1.5°C Turkey's INDC target would increase emissions to 355% above 1990 levels, or approximately 999 MtCO₂e, by 2030. To keep below the 1.5°C temperature limit, Turkey's 2030 emissions would need to be around 280 MtCO₂e (or 28% above 1990 levels), leaving an ambition gap of 719 MtCO₂e. All figures exclude land use emissions.

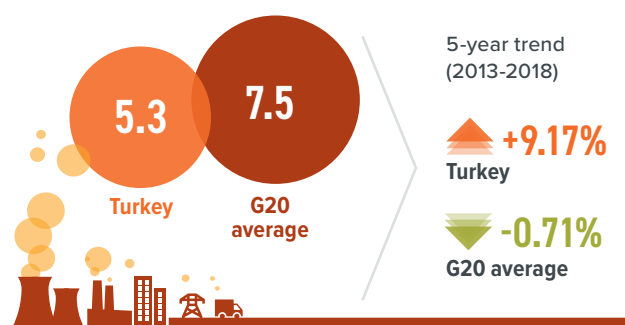
Gutschow et al., 2021; Climate Analytics, 2021

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



PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS BELOW G20 AVERAGE

GHG emissions (incl. land use) per capita (tCO₂e/capita)² in 2018



Turkey's per capita emissions are 0.7 times the G20 average. Total per capita emissions have increased by 9% between 2013 and 2018.

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

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION



Turkey could achieve a **14% overall reduction in GHG emissions below 2017 levels by 2030** with ambitious, but realistic measures in the electricity, buildings, and transport sectors alone.



With emissions consistently below those in its INDC 2030 target, **Turkey should ratify the Paris Agreement and submit a more ambitious target.**



Turkey's intention to secure its **energy independence could be achieved through renewable energy** rather than its planned increase of domestic coal production.

Climate Action Tracker, 2019

RECENT DEVELOPMENTS



32 GW of new coal power capacity is planned, offsetting the closure of five coal power plants at the beginning of 2020 that failed to meet environmental protocols.



Turkey continues to develop nuclear energy, having completed one of four units at Akkuyu in 2019, despite heightened risks due to intense seismic activity in the region.



In 2019 Turkey surpassed its 2023 target of 38% share of renewables in the power mix, reaching 44%. However this was largely due to low overall demand not the addition of renewable energy.



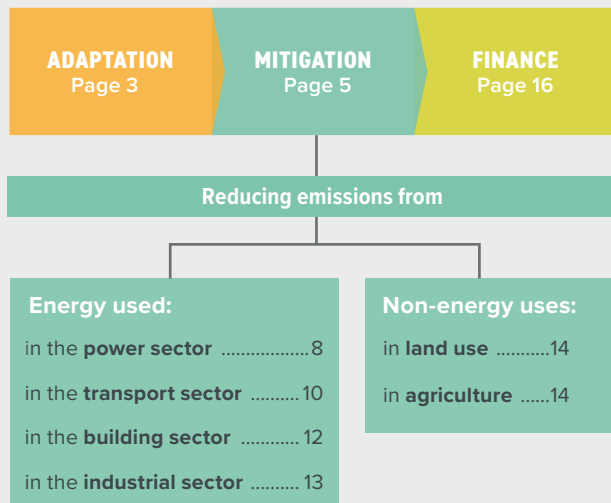
CORONAVIRUS RESPONSE AND RECOVERY

Despite the IEA's projection that nine million new energy-related jobs could be created worldwide between 2021-2023 by investing in a sustainable recovery plan, Turkey's stated commitment to maintaining employment does not include any explicit measures to ensure a sustainable recovery. Rather, a focus has been placed on reviving export and production-oriented growth. Government has committed USD 9.52bn for electricity distribution and Research & Development.

IEA, 2020, 2021

CONTENTS

We unpack Turkey'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 Ratings³ 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.

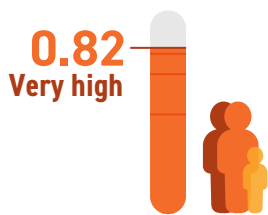


Policy Ratings⁴ evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.



SOCIO-ECONOMIC CONTEXT

Human Development Index (HDI)

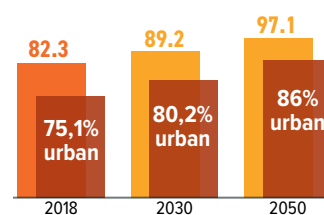


The HDI reflects life expectancy, level of education, and per capita income. Turkey ranks very high.

Data for 2019. UNDP, 2020

Population and urbanisation projections

(in millions)

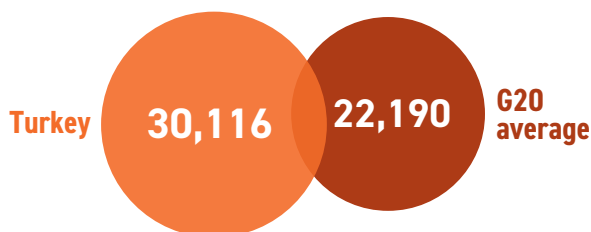


Turkey's population is projected to increase by 18% by 2050, and become more urbanised.

United Nations, 2019; United Nations, 2018

Gross Domestic Product (GDP) per capita

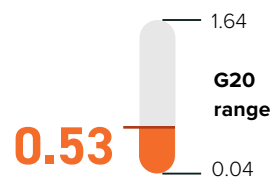
(PPP constant 2015 international \$) in 2019



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 44,200 people die in Turkey 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 higher 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

Turkey aims to increase the share of power generation from domestic coal and to increase domestic production by 248% between 2019-2023, along with increasing installed capacity using domestic coal by 4 GW over the same period. This contradicts the intent of its Decent Work in the Green Economy initiative promoting Turkey's transition to a greener economy, and the admission in its 2015-2018 Industry Strategy Plan that 'green jobs' are likely to become an engine of growth. The 2019-2023 Industry and Technology Strategy had no such focus; instead, focussing on technology, encouraging new tech startups, and boosting manufacturing and exports. Government policy is lagging the impressive gains in renewable energy installations, as Turkey surpassed its amended 2023 target for the share of renewables in the power mix (38.8%) the year it was updated (2019). Turkey has framed its energy transition as an engineering problem with technological solutions, while no public debates have addressed spatial and social considerations, energy equity, or energy justice.

Ministry of Energy and Natural Resources, 2019; Enerdata 2020



ADAPTATION

ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE



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



On average, 29 fatalities and almost USD 462 million losses occur annually due to extreme weather events.



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.



With 3°C of warming, Turkey will experience around 35 days per year when temperatures reach more than 35°C.

ADAPTATION NEEDS

Climate Risk Index

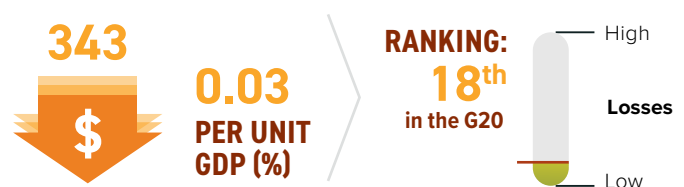
Impacts of extreme weather events in terms of fatalities and economic losses that occurred. All numbers are averages (1999-2018).

Annual weather-related fatalities



Based on Germanwatch, 2019

Annual average losses (US\$ millions PPP)



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			
	Wheat	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.



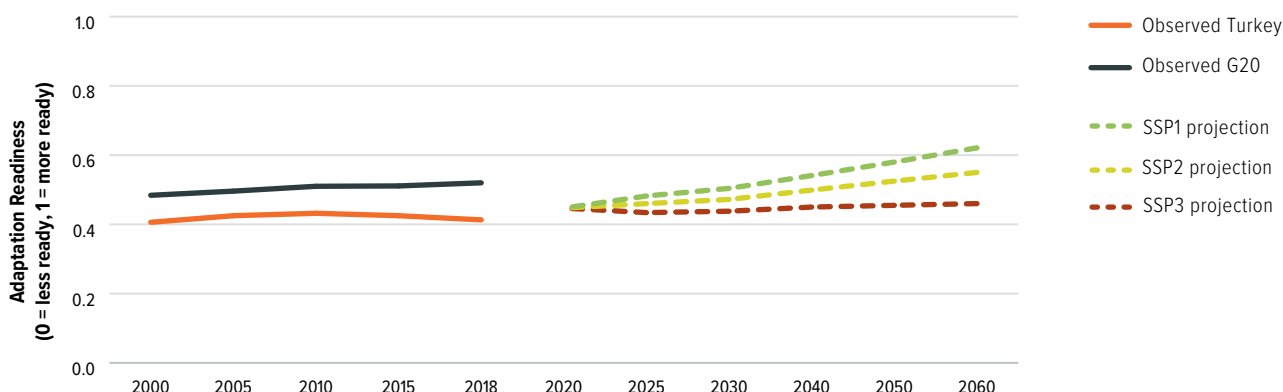
CORONAVIRUS RESPONSE AND RECOVERY

Turkey has not addressed the need to invest in climate adaptation in its announced responses to the COVID-19 crisis.

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



Turkey scores below the G20 average in observed data, though its readiness has been improving steadily. Adaptation challenges still exist, but Turkey is well positioned to adapt if it puts in place measures compatible with SSP1. Measures represented by SSP3 would likely undermine its readiness to adapt in the long term.

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
National Adaptation Programme and the third strategy for climate adaptation reporting	2012	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>		<div></div>	<div></div>	<div></div>	<div></div>	n/a

Intended Nationally Determined Contribution (NDC): Adaptation

TARGETS

Not mentioned

ACTIONS

Not mentioned

MITIGATION

REDUCING EMISSIONS TO LIMIT GLOBAL TEMPERATURE INCREASE



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



Turkey's GHG emissions have increased by 133% (1990-2018) and the government's proposed climate targets for 2030 (21% below its BAU scenario) is **not in line with a 1.5°C pathway**. Projections under current policies show 2030 emissions will be below the government's modest target.

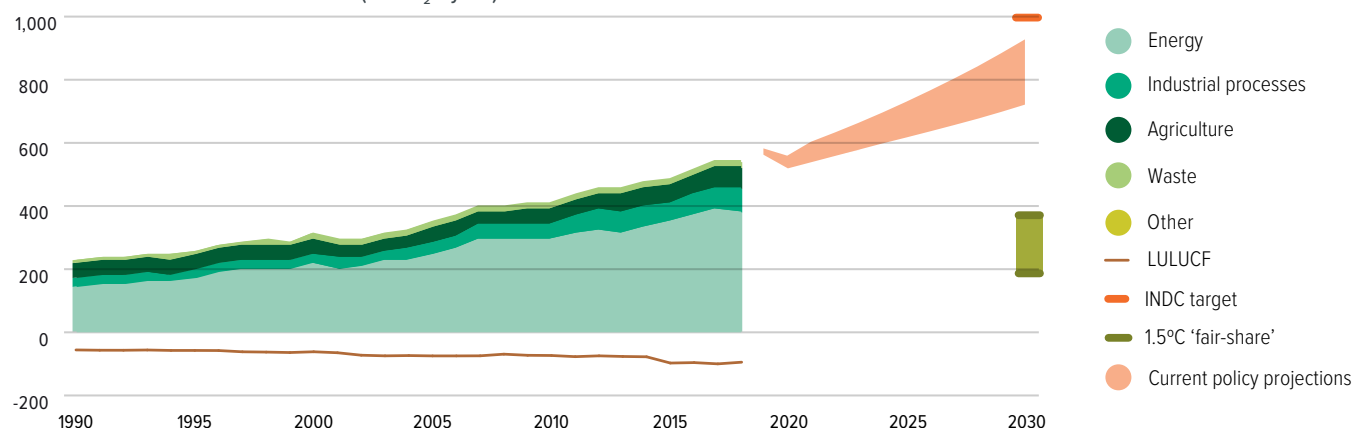


In 2030, global CO₂ emissions need to be 45% below 2010 levels and reach net zero by 2050. Global energy-related CO₂ emissions must be cut by 40% below 2010 levels by 2030 and reach net zero by 2060.

Rogelj et al., 2018

GHG emissions across sectors and CAT 1.5°C 'fair-share' range (MtCO₂e/year)⁵

Total GHG emissions across sectors (MtCO₂e/year)

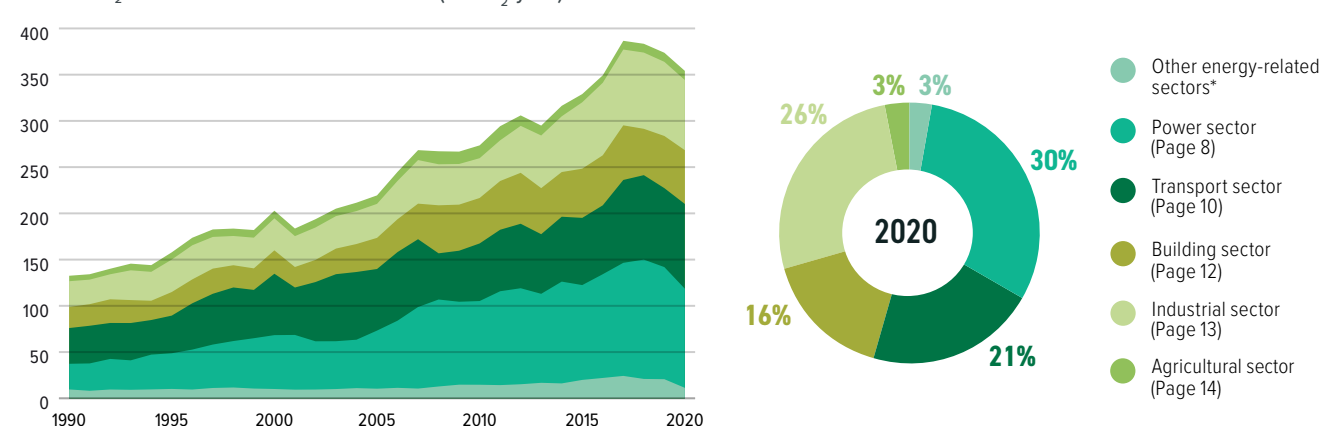


Turkey's emissions (excl. land use) increased by 133% between 1990 and 2018 to 529 MtCO₂e. When considered by category, increases were largely due to a sustained increase in energy-related emissions. Increases are seen in all sectors over the same timeframe. Turkey is on track to overachieve its INDC based on current policies, indicating significant potential for the government to scale up climate action, ratify the Paris Agreement, and submit a stronger target in line with its 'fair-share' contribution to the Paris Agreement's goals, in its first NDC.

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

Energy-related CO₂ emissions by sector

Annual CO₂ emissions from fuel combustion (MtCO₂/year)



The largest driver of overall GHG emissions are CO₂ emissions from fuel combustion. In Turkey, emissions have been increasing since 1990. The power sector is, at 30%, the largest contributor, followed by industry and transport at 26% and 21%, respectively.

Enerdata, 2021

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

Other energy-related sectors covers energy-related CO₂ emissions from extracting and processing fossil fuels.

ENERGY OVERVIEW



Turkey's energy mix is dominated by fossil fuels (83.2%) close to the G20 average (82%). Although Turkey's coal consumption has slightly decreased, it is higher than the G20 average. Total fossil fuel demand has fallen since 2017, led by a fall in natural gas consumption. Overall energy demand has remained constant due to increased renewables.

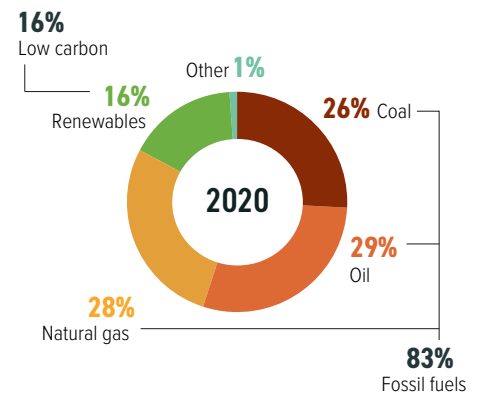
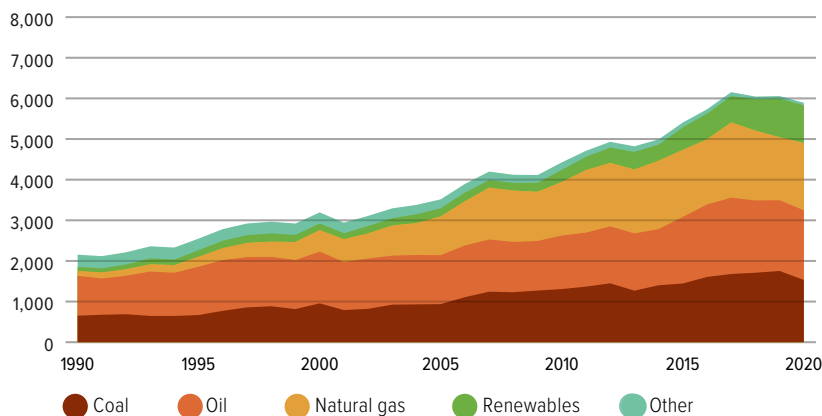


The share of fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050, and to substantially lower levels without carbon capture and storage (CCS).

Rogelj et al., 2018

Energy mix

Total primary energy supply (TPES) (PJ)

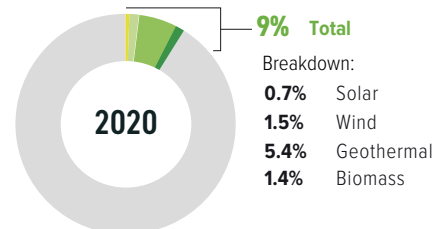
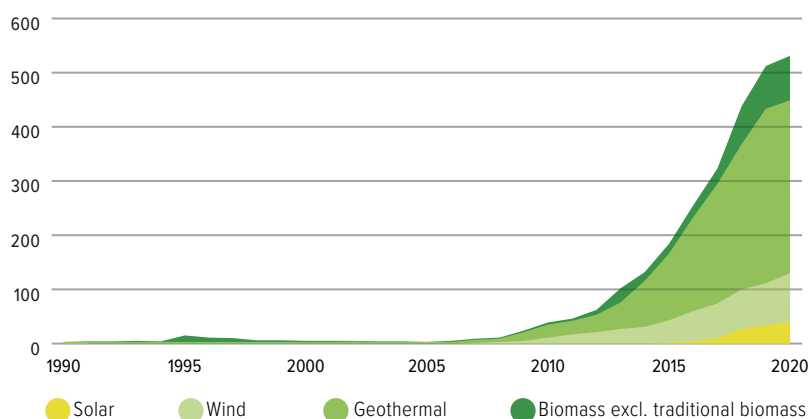


This graph shows the fuel mix for all energy supply, including energy used not only for electricity generation, heating, and cooking, but also for transport fuels. Fossil fuels (oil, coal, and gas) make up 83% of Turkey's energy mix, around the G20 average. The share of renewable energy in the energy mix decreased slightly (0.1%) since 2019 and remains at around 16% of the energy mix. Coal consumption has shown a decreasing trend that reflects the coal phase-out needed for energy decarbonisation.

Enerdata, 2021 Due to rounding, some graphs may sum to slightly above or below 100%

Solar, wind, geothermal, and biomass development

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



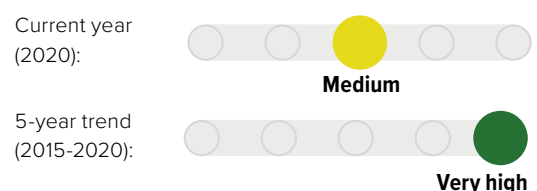
Solar, wind, geothermal and biomass account for 9.0% of Turkey's energy supply – the G20 average is 7.1%. The share in total energy supply has increased by around 177% from a low baseline, in the last five years in Turkey (2015-2020). Bioenergy (for electricity and heat) makes up the largest share.

Enerdata, 2021

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

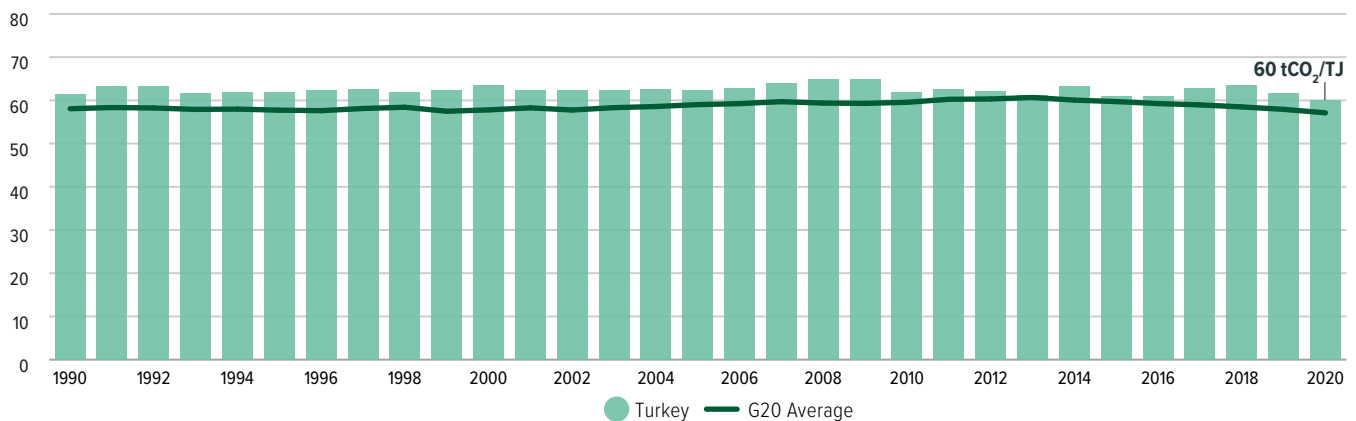
Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.

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



Carbon intensity of the energy sector

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

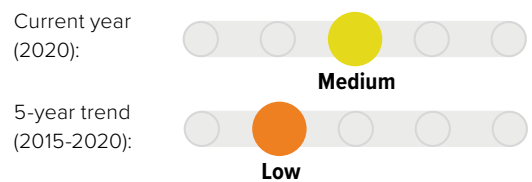


Carbon intensity is a measure of how much CO₂ is emitted per unit of energy supply.

In Turkey, carbon intensity has remained almost constant at around 60 tCO₂ over the last five years and is slightly higher than the G20 average of 57 tCO₂. This relatively high level reflects the continuously high share of fossil fuels in the energy mix.

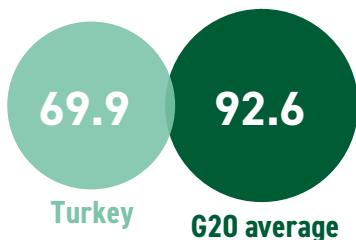
Enerdata, 2021

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

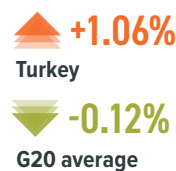


Energy supply per capita

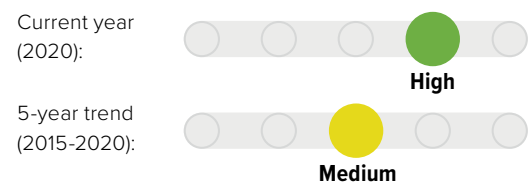
TPES per capita (GJ/capita) in 2020



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



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

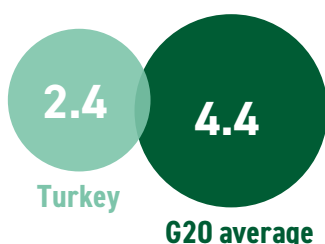


The level of energy use per capita is closely related to economic development, climatic conditions and the price of energy. Energy use per capita in Turkey is, at 69.9 GJ/capita in 2020, well below the G20 average. Between 2015 and 2020, per capita energy use in Turkey has increased by 1%, whereas the average in the G20 has decreased slightly (0.12%) over the same period.

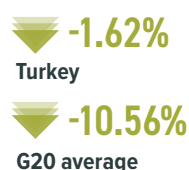
Enerdata, 2021; United Nations, 2019

Energy intensity of the economy

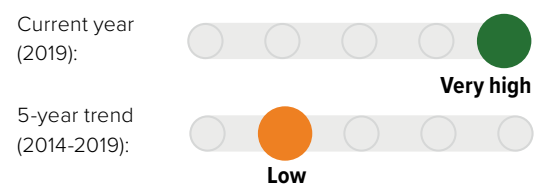
(TJ/million US\$2015 GDP) in 2019



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



Decarbonisation rating: energy intensity compared to other G20 countries



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. Turkey's energy intensity is lower than the G20 average and has been decreasing at a lower speed -1.62% (2014-2019) as compared to the G20.

Enerdata, 2021; World Bank, 2021

POWER SECTOR

Emissions from energy used to make electricity and heat

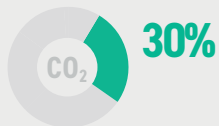


Turkey produced 35% of its electricity from coal in 2020. Concern over reliance on foreign energy imports has led Turkey to increase renewable energy generation and consume domestically produced coal rather than imported natural gas. If Turkey continues this approach, coal's replacement of natural gas will largely cancel out emission reductions from increased renewables.



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.

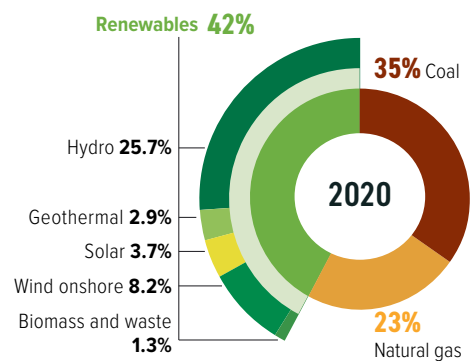
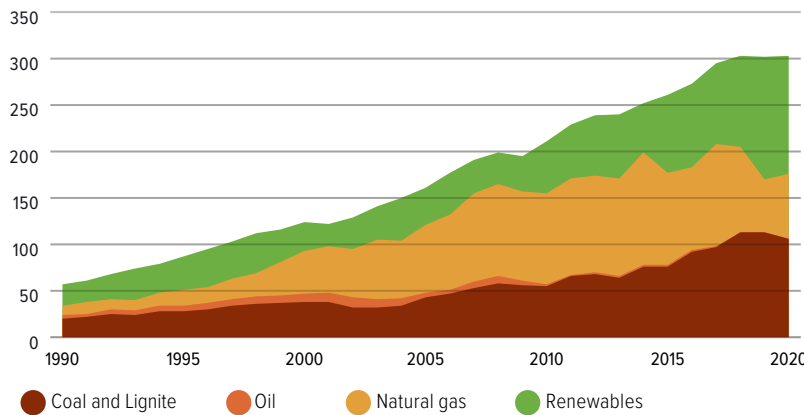
Rogelj et al., 2018; Climate Action Tracker, 2020b



Share of energy-related CO₂ emissions from electricity and heat production in 2020.

Electricity generation mix

Gross power generation (TWh)



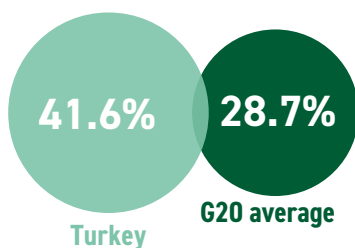
Turkey generated 58% of its electricity from fossil fuels in 2020, with coal constituting about a third (35%) of the total. This large share of fossil fuels, and coal in particular, is unlikely to change as Turkey has a large pipeline of additional coal capacity coming online in the medium-term. Renewables contributed 42% of the electricity generation mix in 2020, and the proportion has increased at a faster rate (37%) than the G20 average increase (24%) between 2015-2020.

Enerdata, 2021

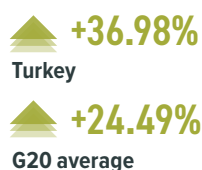
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Share of renewables in power generation

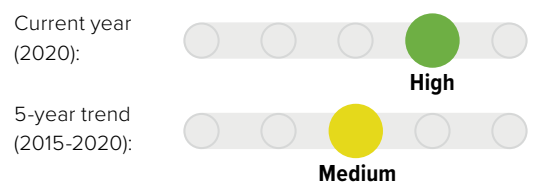
(incl. large hydro) in 2020



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



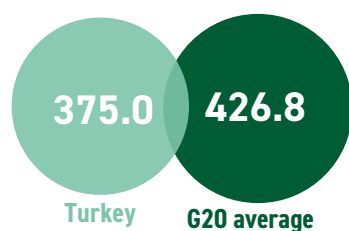
Decarbonisation rating: share of renewables compared to other G20 countries



Enerdata, 2021

Emissions intensity of the power sector

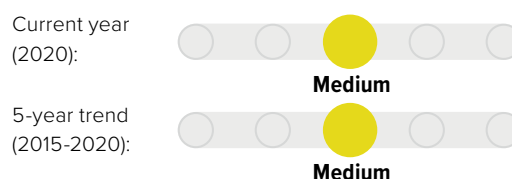
(gCO₂/kWh) in 2020



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



Decarbonisation rating: emissions intensity compared to other G20 countries



For each kilowatt hour of electricity, 375.0 g of CO₂ are emitted in Turkey. This is less than the G20 average. The overall emissions-intensity has dropped over the last five years (12.55% from 2015-2020), primarily due to the large year-on-year increase in renewable energy generation in 2019 that displaced natural gas. Prior to that, fossil-fuel-based generation was increasing considerably.

Enerdata, 2021

POLICY ASSESSMENT

Renewable energy in the power sector



Turkey easily achieved the 38% renewable energy generation target outlined in its 11th Development Plan. While it does not have a long-term renewable energy generation target – important for providing investment certainty to the industry – there is a target for the installation of 10 GW of solar and 10 GW of wind capacity over 10 years under the 2017 YEKA renewable energy auction programme.

In June 2021, the government announced a new YEKA Wind Energy Power Plant competition for 2,000 MW connection capacity. Turkey has utilised a feed-in-tariff mechanism (YEKDEM) since 2001 and announced a continuation of this programme in early 2021.

Government of Turkey, 2019; Enerdata, 2021; Yalçın and Elmas, 2021

Coal phase-out in the power sector



Turkey has not announced any intention to phase out coal, and rather, it is planning to increase the use of coal in the electricity system. As of July 2021, 12 GW of new coal capacity has been announced, or is at the pre-permit or permitted stage - the 5th highest capacity pipeline in the world.

While it is promising that 84 GW of capacity was cancelled between 2010-2021, more coal must be phased out if Turkey is to play its role in limiting global warming to 1.5C.

Given limited demand growth in recent years and the increasing difficulty of sourcing finance for new coal projects, some of this capacity may not come to fruition.

Kutluay and Clewer, 2021; Global Energy Monitor, 2021

CORONAVIRUS RESPONSE AND RECOVERY

While the vast majority of the measures announced by the Turkish government in response to the COVID-19 crisis are not explicitly aimed at furthering action on climate change, there are some that do have implications for GHG emissions. On the one hand VAT on domestic airline travel has been reduced from 18% to 1%, which will ensure higher aviation emissions. Flexible and remote working models regulated under Turkish legislation are being encouraged, which will likely reduce emissions from the transport sector.

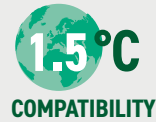
Lexology, 2020

TRANSPORT SECTOR

Emissions from energy used to transport goods and people



Roughly a quarter of people in Turkey have a car, although this number is rising rapidly. The sector is dominated by fossil fuels – 95% of freight is transported via road. In order to stay within a 1.5°C limit, passenger and freight transport need to be decarbonised.



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

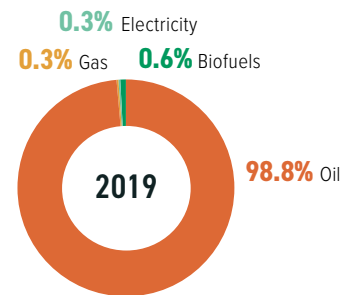
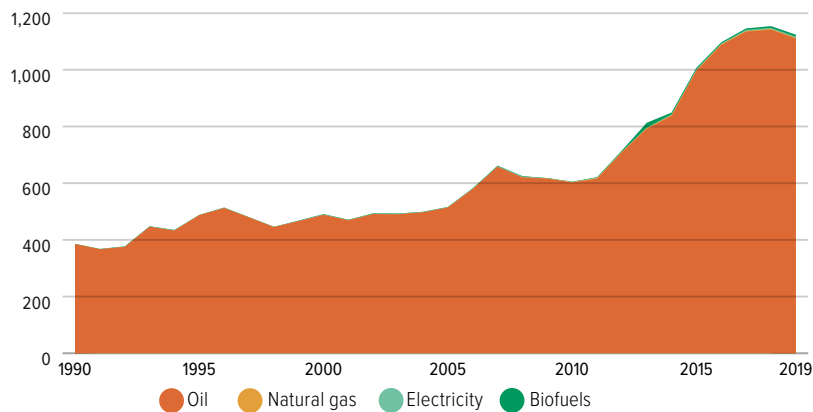


0.11%
Indirect emissions
21.44%
Direct emissions

Share of transport in energy-related CO₂ emissions

Transport energy mix

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

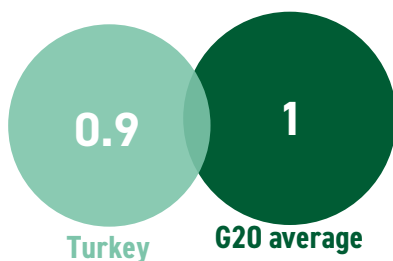


Electricity and biofuels make up slightly under 1% of the energy mix in transport.

Enerdata, 2021 Due to rounding, some graphs may sum to slightly above or below 100%

Transport emissions per capita

excl. aviation (tCO₂/capita) in 2020



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

▼ **-2.3%**
Turkey

▼ **-4.3%**
G20 average

Decarbonisation rating: transport emissions
compared to other G20 countries

Current year
(2020):



5-year trend
(2015-2020):

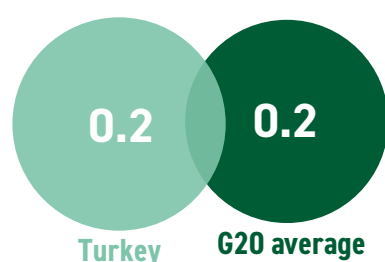


Reductions in transport emissions per capita in 2020, and concomitant changes in the 5-year trends and decarbonisation ratings, reflect widespread economic slowdowns and transport restrictions imposed in response to the COVID-19 pandemic. For a discussion of broader trends in the G20 and the rebound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

Enerdata, 2021; United Nations, 2019

Aviation emissions per capita⁶

(tCO₂/capita) in 2018



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

+102.21%
Turkey

+21.25%
G20 average

Decarbonisation rating: aviation emissions
compared to other G20 countries

Current year
(2018):



5-year trend
(2013-2018):



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

Motorisation rate



150 VEHICLES
per 1,000 inhabitants in
2019 in the Turkey*

Enerdata, 2021

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

As of the end of February 2021, only 0.3% of the registered cars in Turkey were electric or hybrid.

TWTworld, 2021

Passenger transport

No data available for Turkey

Freight transport

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



Freight transport by air, pipelines
and waterways are excluded due
to lack of data.

Enerdata, 2021

*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



Turkey has not announced plans to phase out fossil-fuel-based cars. While the vehicle registration tax increases with engine size, acting as a disincentive for less fuel-efficient vehicles, the annual ownership tax is lower for older cars, encouraging people to keep these less efficient vehicles for longer. Some tax incentives for electric vehicles exist, but these still account for less than 1% of vehicle sales in Turkey.

Şenzeybek and Mock, 2019

Phase out fossil fuel heavy-duty vehicles



Turkey has no strategy for reducing emissions from freight transport, nor does it have fuel efficiency standards for heavy-duty vehicles (HDVs), and its tax reductions for EVs explicitly exclude HDVs.

Modal shift in (ground) transport



Turkey has no long-term strategy for achieving modal shift but, as outlined in its 2011 Climate Change Action Plan, it has been vastly expanding its investment in its rail network. In 2018, Turkey announced a USD 46bn investment over five years, including a goal to electrify the entire rail network. In June 2020, further plans were announced, to more than quadruple the high-speed rail network from 1,200 km to 5,500 km.

Daily Sabah, 2018, 2020

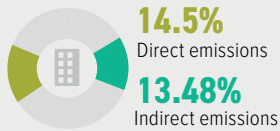
BUILDING SECTOR

Emissions from energy used to build, heat and cool buildings

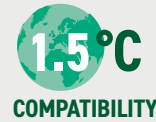


Direct emissions and indirect emissions from the building sector in Turkey account for 14.5% and 13.48% of total energy-related CO₂ emissions, respectively. Per capita emissions from the building sector are slightly lower than the G20 average.

Turkey's policies are not sufficient for a 1.5°C pathway.



Share of buildings in energy-related CO₂ emissions. Building emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (grid-electricity for air conditioning, appliances, etc.)



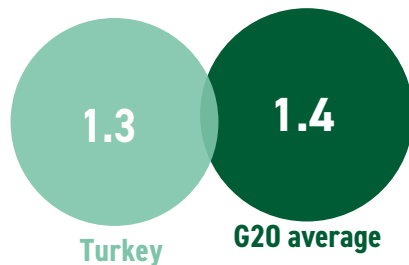
By 2040, global emissions from buildings need to be reduced by 90% from 2015 levels, and be 95-100% below 2015 levels

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

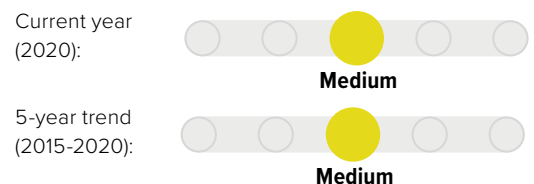
(incl. indirect emissions) (tCO₂/capita) in 2020



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



Decarbonisation rating: building emissions compared to other G20 countries



Building-related emissions per capita are slightly below the G20 average as of 2020. This reflects the high fossil fuel share of the electricity mix. In contrast to the 3% G20 average decline, Turkey has increased marginally – by 0.28% (2015-2020).

Enerdata, 2021; United Nations, 2019

POLICY ASSESSMENT

Near zero energy new buildings



Turkey has produced a number of documents that include measures aimed at increasing the energy efficiency of buildings. These include the energy performance of buildings code, which enforces isolation standards, and the 2018 National Energy Efficiency Action Plan (NEEAP), which outlined a goal of “nearly zero energy buildings” for newly built private and public buildings. Target years for this goal were intended for publication in 2019, but have still not been announced. The NEEAP also states it will consider a policy for new buildings to have at least class B-EPC (Energy Performance Certificate), but nothing has been formalised.

Ministry of Energy and Natural Resources, 2017

Renovation of existing buildings



Turkey has no long-term retrofitting strategy. However, there are numerous short-term goals for improving the energy efficiency of existing buildings. These include a 15% reduction in energy use from public buildings by 2023, the transformation of one quarter of the 2010 building stock to sustainable buildings by 2023, and the introduction of energy performance contracts to increase energy efficiency investments in public buildings.

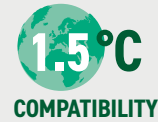
Sustainable Development Turkey, 2012; Ministry of Energy and Natural Resources, 2017; Daily Sabah, 2019

INDUSTRY SECTOR

Emissions from energy use in industry

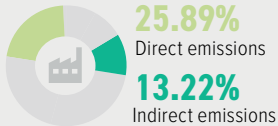


Direct and indirect emissions from industry in Turkey make up 26% and 13% of energy-related CO₂ emissions, respectively. **Turkey lacks effective policies to increase the energy efficiency of the industry sector**, or any effective policies to reduce emissions and to decarbonise the sector.



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

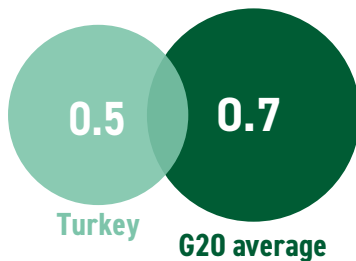
Rogelj et al., 2018



Share of industry in energy-related CO₂ emissions.

Industry emissions intensity⁷

(tCO₂e/USD2015 GVA) in 2017



Enerdata, 2021; World Bank, 2021

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

▼ -11.06%

Turkey

▼ -16.45%

G20 average

Decarbonisation rating: industry emissions intensity compared to other G20 countries

Current year (2017):

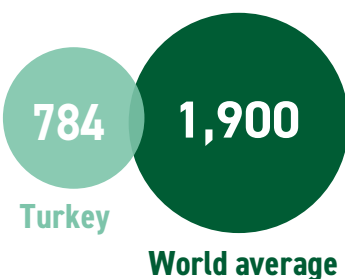


5-year trend (2012-2017):



Carbon intensity of steel production⁸

(kgCO₂/tonne product) in 2016



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

World Steel Association, 2018; Climate Action Tracker, 2020c

POLICY ASSESSMENT

Energy efficiency



The International Energy Efficiency Scorecard 2018 ranks Turkey ninth out of 25 key industrial countries for industrial energy efficiency. The scorecard showed Turkey was lacking in R&D for manufacturing, policies to encourage energy management, and minimum efficiency standards for electric motors. In its National Energy Efficiency Action Plan 2017-2023, Turkey aims to reduce energy intensity by at least 10% in each sub-sector, implement performance standards, scale up cogeneration systems, and support energy efficiency projects through low-interest loans.

Ministry of Energy and Natural Resources, 2017

LAND USE SECTOR

Emissions from changes in the use of the land



To stay within the 1.5°C limit, Turkey needs to make the land use and forest sector a greater net sink of emissions, e.g. by curbing the expansion of residential areas, discontinuing the degradation of soils, marshes and wetlands, and by creating new forests.

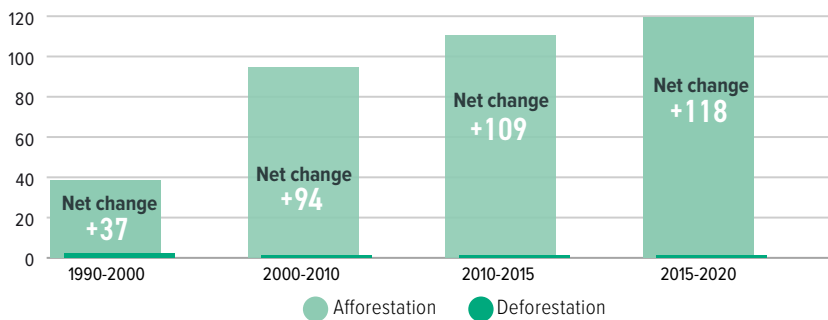


Global deforestation needs to be halted and changed to net CO₂ removals by around 2030.

Rogelj et al., 2018

Annual forest expansion, deforestation and net change

Forest area change in 1,000 ha/year



Between 2015-2020, Turkey gained 118 kha of forest area per year.

Global Forest Resources Assessment, 2020

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



The land use, land use change and forestry sector has been a net sink for Turkey since 2008, and there is a target in place to increase the total share of forest cover to 30% by 2023. In November 2019, Turkey planted 11 million trees in one day, breaking the record for most trees planted in a single location in one hour. However, in January 2020, the head of the Turkish Agriculture and Forestry union reported that 90% of the saplings his team inspected were already dead, noting they were planted at the wrong time of year and received insufficient water.

Government of Turkey, 2019; Kent, 2020

AGRICULTURE SECTOR

Emissions from agriculture



Turkey's agricultural emissions are mainly from the digestive processes (mainly cattle) and livestock manure. A 1.5°C compatible pathway requires behavioural and dietary shifts and less fertiliser use.

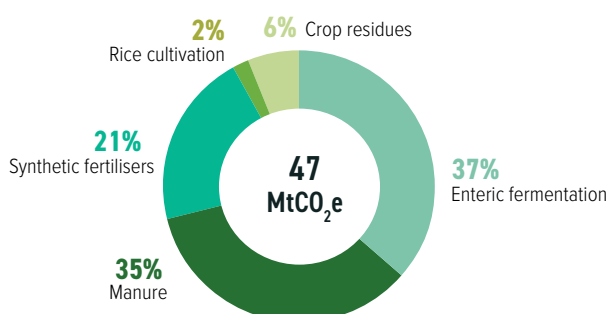


Methane emissions (mainly enteric fermentation) need to decline by 10% by 2030 and by 35% by 2050 (from 2010 levels). Nitrous oxide emissions (mainly from fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

Rogelj et al., 2018

Emissions from agriculture (excluding energy)

Emissions from the agriculture sector in 2018



In Turkey, the largest sources of GHG emissions in the agriculture sector are from enteric fermentation (37%), manure (35%), and the use of synthetic fertilisers (21%). Dietary changes and efficient use of fertilisers 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

WARMING OF

2.4°C

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 Action Tracker, 2021a

AMBITION: 2030 TARGETS

Intended Nationally Determined Contribution (NDC): Mitigation

TARGETS

Up to 21% reduction in GHG emissions from BAU level by 2030

ACTIONS

Actions specified in the following sectors: energy, industry, transport, buildings, agriculture, waste, forestry

Climate Action Tracker (CAT) evaluation of targets and actions

CAT analysis and rating unavailable at time of writing.

Please check www.climateactiontracker.org from November 2021 onwards for the updated rating.

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

Turkey is the only G20 country that has not ratified the Paris Agreement. On 21 September 2021, at the 76th session of the UN General Assembly, however, President Erdoğan announced that Turkey would ratify the Paris Agreement before the COP26 in Glasgow.

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	No long-term strategy in place
Interim steps	
Sectoral targets	
Net zero target	
Net zero year	

FINANCE

MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS



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



Turkey spent USD 4.8bn on fossil fuel subsidies in 2017, primarily on petroleum. There is no carbon pricing scheme nor any financial policy or regulation to support the shift from dirty fuels to green.



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

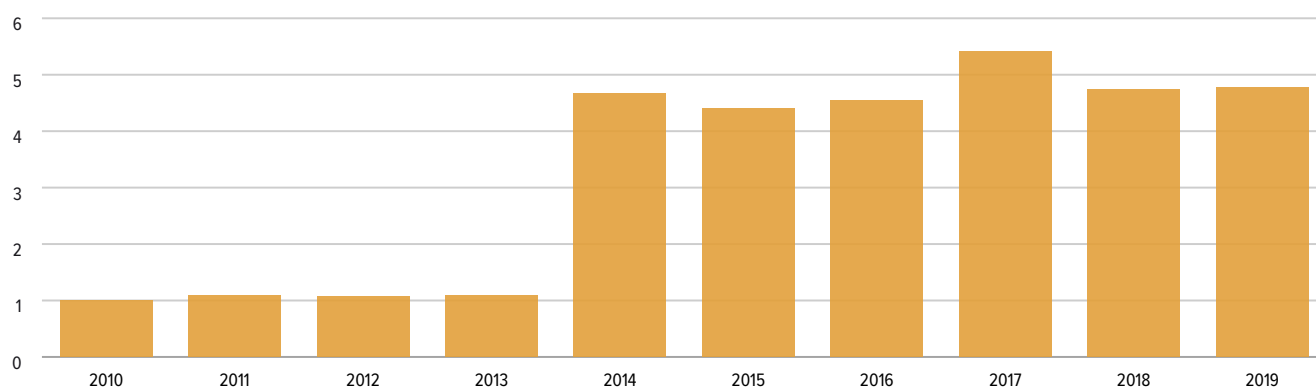
Rogelj et al., 2018

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

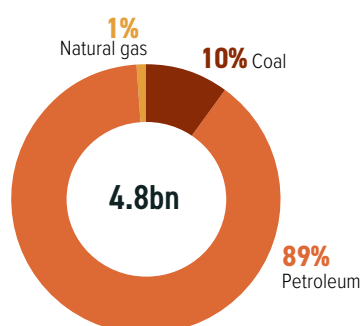
(USD billions)



OECD-IEA Fossil Fuel Support database, 2020

Fossil fuel subsidies by fuel type

USD in 2019



Over the past decade (2010-2019), Turkey's fossil fuel subsidies have increased substantially, reaching a value of USD 4.8bn. Over this period, most of the subsidies were directed to supporting the production and consumption of petroleum, followed by support for coal. Comparable data is not available yet for 2020.

According to the Energy Policy Tracker data, however, during 2020 Turkey pledged at least USD 10.9bn to fossil fuel energy as part of its energy-related funding commitments and COVID-19 economic response. This amount is largely made up by increased retail loans for housing with no energy efficiency requirements, launched by the Turkish public banks.

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

The Turkish Economic Stability Shield package announced in response to the COVID-19 crisis does not direct finance towards climate-related ends. Priority has instead been given to supporting exporters, and small and medium enterprises (SMEs), and providing various tax cuts for businesses. The European Regional Development Bank, an institution that invests heavily in Turkey, stated that governments should take careful policy action that protects the environment and should not support fossil fuels.

Lexology, 2020; Bennett, 2020

Carbon pricing and revenue

(USD millions)

Turkey has no explicit carbon pricing scheme in place, but is considering introducing one. The proportion of domestic emissions to be covered or the price to be imposed on emissions have yet to be decided.

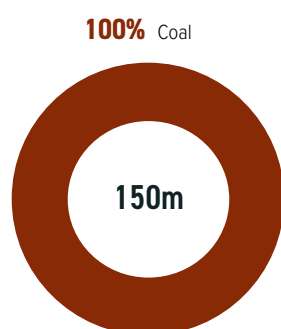
IACE, 2021; OECD, 2020

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)



There is very limited data for Turkey due to poor reporting from Turk Eximbank and the Development Bank of Turkey. The limited data shows USD 100m each from Halkbank, Vakifbank and Ziraat Bankasi each in 2018 for the coal-fired Kangal Thermal Power Plant in Turkey.

Oil Change International, 2020

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

Provision of international public support

Turkey is not listed in Annex II of the UNFCCC and it is, therefore, not formally obliged to provide climate finance. It is, however, an Annex I country and submits biennial reporting to the UNFCCC. While Turkey 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.



The Turkish government's efforts to green its financial system have been relatively slow, and there is limited evidence of its uptake. In March 2021, the Turkish Government announced the Economic Reform Package, which aims to promote the issuance of more

green bonds. Turkey's Treasury is working on an environmental, social, and governance (ESG) framework that will allow it to sell bonds abroad for the first time, with pricing tied to environmental and social goals. The framework is planned for the end of 2021.

In 2020 the Banks Association of Turkey released the sustainability guidelines for the banking sector. The sustainability principles

are aimed at helping banks manage the environmental and social predictability, transparency, and traceability of their activities.

Turkey's Banking Regulation and Supervision Agency (BRSA) has taken initiatives to promote collaboration and knowledge sharing on sustainable finance between banks, public bodies, international organisations, and NGOs. The guidelines also encourage financial institutions to formalise an Environment & Sustainability (E&S) or ESG policy and even go beyond E&S requirements in local laws and regulations. It asks financial institutions to set E&S or ESG objectives and targets. It also requires them to publicly disclose their E&S policy and its governance

The Banks Association of Turkey, 2020; Turkey Investment Office, 2021

Intended 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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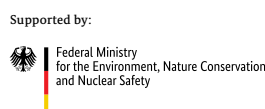
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