



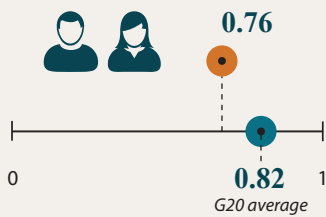
BROWN TO GREEN: G20 TRANSITION TO A LOW CARBON ECONOMY

Turkey

This country profile assesses Turkey's past, present and indications of future performance towards a low-carbon economy by evaluating emissions, decarbonisation, climate policy performance and climate finance. The profile summarises the respective findings from, amongst others, the Climate Change Performance Index (CCPI, operated by Germanwatch and Climate Action Network Europe), the Climate Action Tracker (CAT, operated by Climate Analytics, NewClimate, Ecofys and PIK), and analyses from the Overseas Development Institute (ODI).

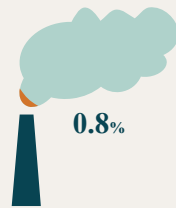


Human Development Index



Source: UNDP, data for 2015

Share of global GHG emissions

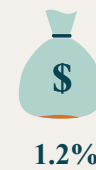


Source: World Bank Indicators, data for 2012

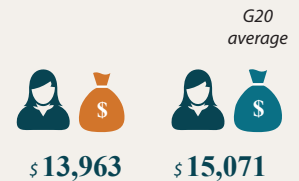
GHG emissions per capita (tCO₂e/cap)



Share of global GDP

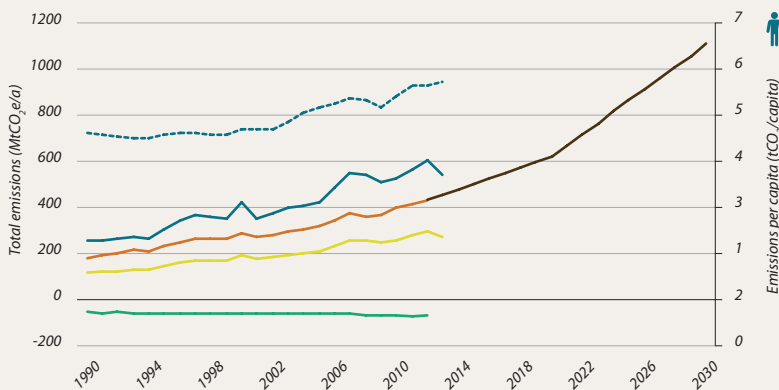


GDP per capita



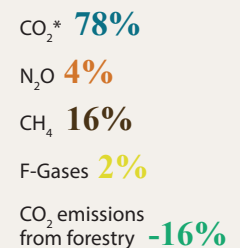
Source: IEA, data for 2013

GREENHOUSE GAS (GHG) EMISSIONS

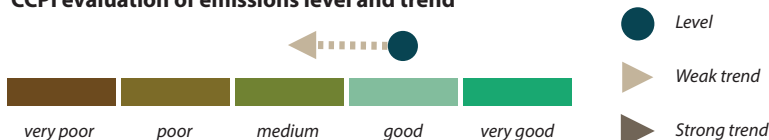


Turkey's greenhouse gas (GHG) emissions grew rapidly and are expected to increase even faster in the coming years. Emissions from land use, land-use change and forestry (LULUCF) are in the negative range. Energy-related carbon dioxide (CO₂) emissions have developed in line with total GHG emissions. Although still well below G20 average, per capita emissions have increased from less than 3 tCO₂ before the 2000s, up to near 4 tCO₂ in 2013. The CCPI ranks Turkey's emissions level as relatively good; the five-year trend documents a negative development.

Composition of GHG emissions



CCPI evaluation of emissions level and trend

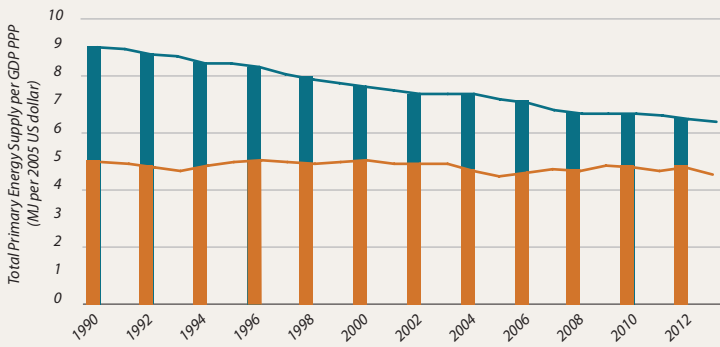


*CO₂ emissions incl. LULUCF
Source: Annex I countries: UNFCCC (2015);
Non-Annex I countries: IEA (2014) and CAT (2015)

Sources: Past energy related emissions from the Climate Change Performance Index (CCPI); past non-energy and future emissions projections from the Climate Action Tracker (CAT). CCPI calculations are primary based on the most recent IEA data; CAT calculations are based on national policies and country communications.

DECARBONISATION

Energy intensity of the economy

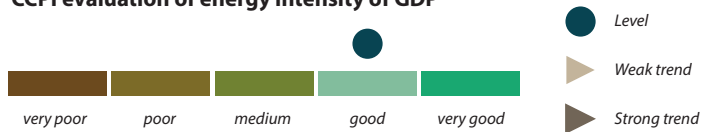


Energy intensity
Average energy intensity in G20

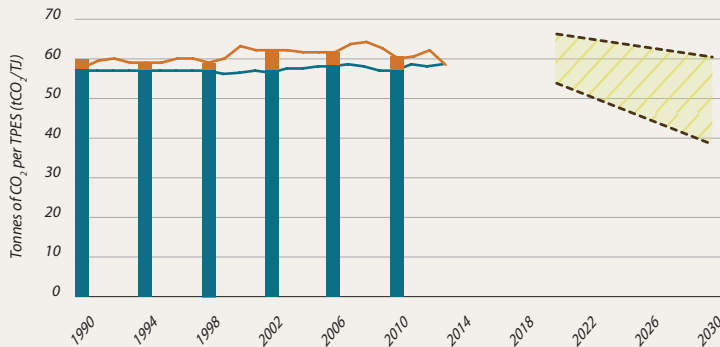
Source: CCPI, 2016

Turkey's energy intensity of economy (TPES/GDP) has only slightly varied in the last decades, with values of around 5 TJ per million US\$, clearly below the G20 average. The CCPI ranks Turkey's level of energy intensity as a good performer, with no clear trend.

CCPI evaluation of energy intensity of GDP



Carbon intensity of the energy sector

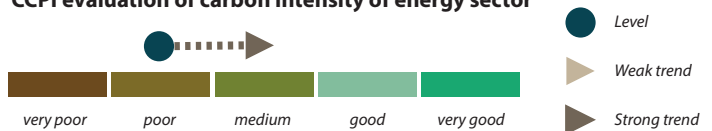


Carbon intensity (past trend)
Average carbon intensity in G20
Global benchmark for a 2°C pathway

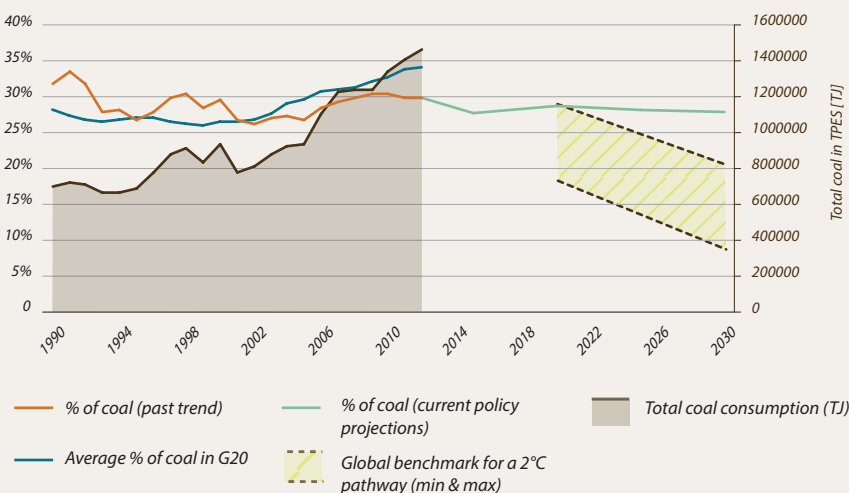
Sources: Past: CCPI; future projections: CAT

After peaking in 2008, the carbon intensity of Turkey's primary energy supply dropped briefly below the G20 average, and has now reached a value close that of 1990. In the CCPI, Turkey still falls into the poor category, while the trend shows some improvements.

CCPI evaluation of carbon intensity of energy sector



Share of coal in Total Primary Energy Supply (TPES)

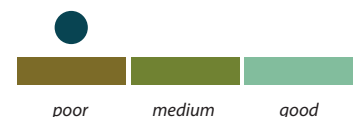


Source: CAT



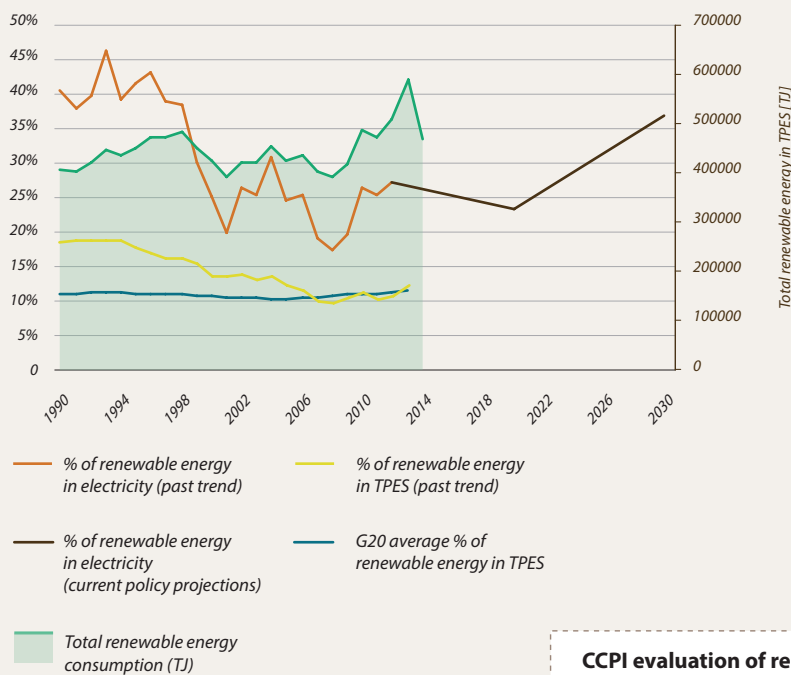
The share of coal in Turkey's primary energy supply fluctuates between 27% and 32%. Future trajectories predict no decline in the share of coal for energy supply; this is based on the large amount of energy expected to come from new coal power plants currently under planning in the country. This development would not be in line with a 2°C-compatible pathway.

Evaluation of coal share in TPES



Source: own evaluation

Renewable energy in TPES and electricity sector

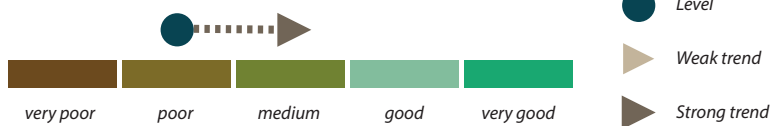


Sources: CCPI and CAT



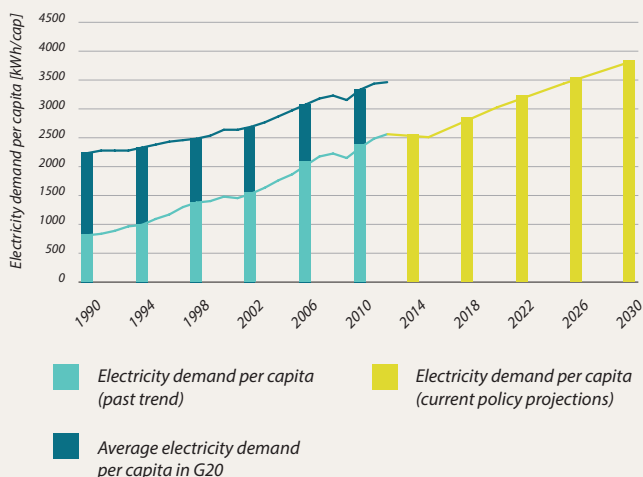
Turkey's share of renewable energy in the primary energy supply decreased between 1990 and 2006. Values have remained relatively stable around 10% since then, although with a slight increase in the last years. The CCPI evaluates the level of Turkey's renewable energies as poor but recognises a positive trend. The share of renewable energy in electricity dropped from 46% during its peak in 1993, to 27% in 2012. It is expected that increase will restart after 2020, up to a level of 37%.

CCPI evaluation of renewable share in TPES



Electricity demand per capita

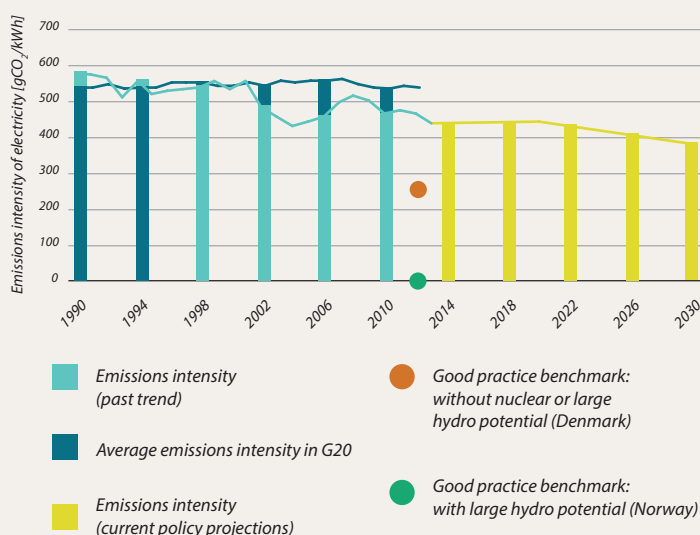
From a starting point of about 833 kWh per capita, Turkey's electricity demand per capita (1999) is growing steadily, but is still relatively low compared to other G20 countries.



Source: CAT, 2015

Emissions intensity of the electricity sector

The emissions intensity of Turkey's electricity sector has fluctuated over the assessment period. In 2002 it dropped below the G20 average, reaching its lowest in 2004, after which it temporarily increased. Since 2008, it has declined and this is expected to continue, although not as strongly as in the past.



Source: CAT, 2015

Evaluation of the electricity emission intensity



Source: own evaluation

CLIMATE POLICY PERFORMANCE

Checklist of the climate policy framework

Low emissions development plan for 2050*	✗
2050 GHG emissions target	✗
Building codes, standards and incentives for low-emissions options	✓
Support scheme for renewables in the power sector	✓
Emissions performance standards for cars	✗
Emissions Trading Scheme (ETS)	✗
Carbon tax	✗

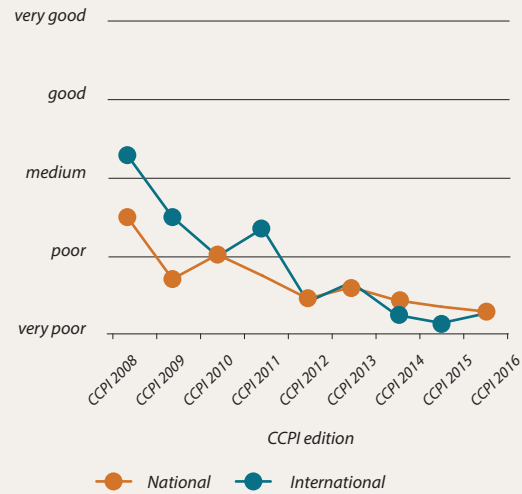
* Understood as decarbonisation plans and not specifically as the plans called for in the Paris Agreement

Source: Climate Policy Database, 2016

Climate policy evaluation by experts

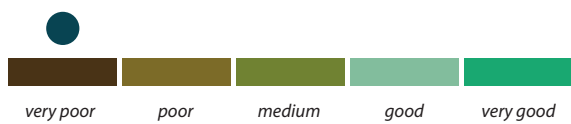
The latest CCPI evaluation sees Turkey's national climate policy continue its downward trend, and remains a very poor international performer. CCPI experts criticise a lack of policies tackling climate change, and of supervision and reporting on the effectiveness of existing ones. In international negotiations, the country often plays an unsupportive role. Turkey receives an overall very poor evaluation by the CCPI.

The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.

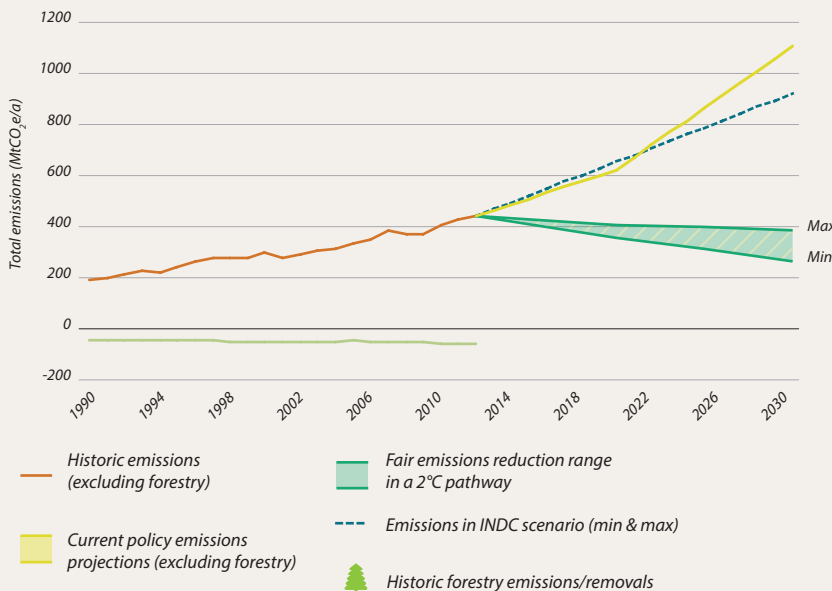


Source: CCPI, 2016

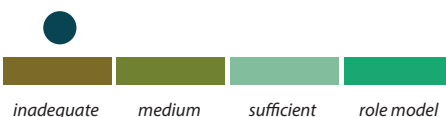
CCPI evaluation of climate policy



Compatibility of national climate targets (INDCs) with a 2°C scenario



CAT evaluation of Turkey's Intended National Determined Contributions (INDC)



Source: CAT, 2015

Turkey submitted its Intended National Determined Contribution (INDC) on 30 September 2015. It included a target to reduce net greenhouse gas (GHG) emissions, including Land Use, Land Use Change and Forestry (LULUCF), by up to 21% below business as usual (BAU) levels in 2030. Excluding LULUCF emissions, this target is equivalent to a 389% increase in GHG emissions on 1990 levels, or a 110% increase on 2012 levels. By comparison, under Turkey's BAU, emissions are expected to increase by 512% on 1990 levels, or 162% on 2012 levels. CAT rates this target "inadequate", as it's not in line with interpretations of a "fair" approach to reach a 2°C pathway. To make a fair contribution to keeping warming below 2°C, Turkey would need to double, or even triple, its post-2020 target.

According to the CAT, Turkey's current policies can already achieve around a third of the reductions it proposes. If Turkey implemented its INDC's energy sector pledges, it would achieve more than two thirds of its INDC target. The lion's share of emissions abatement in Turkey in 2030 depends on its capability to fully exploit its hydro potential which, on its own, can achieve more than a third of the reductions required in the INDC target.

The CAT shows that to achieve its 2030 INDC target, Turkey has both to boost its ambition to limit global warming, and set out a plan with detailed measures.

FINANCING THE TRANSITION

Investment attractiveness



Allianz Energy and Climate Monitor

VERY LOW

RECAI* (E&Y index) Category (own assessment)

LOW

Trend**



*Adapted from RECAI and re-classified in 3 categories (low, medium, high) for comparison purposes with Allianz Monitor.

**Taken from RECAI issue of May 2016

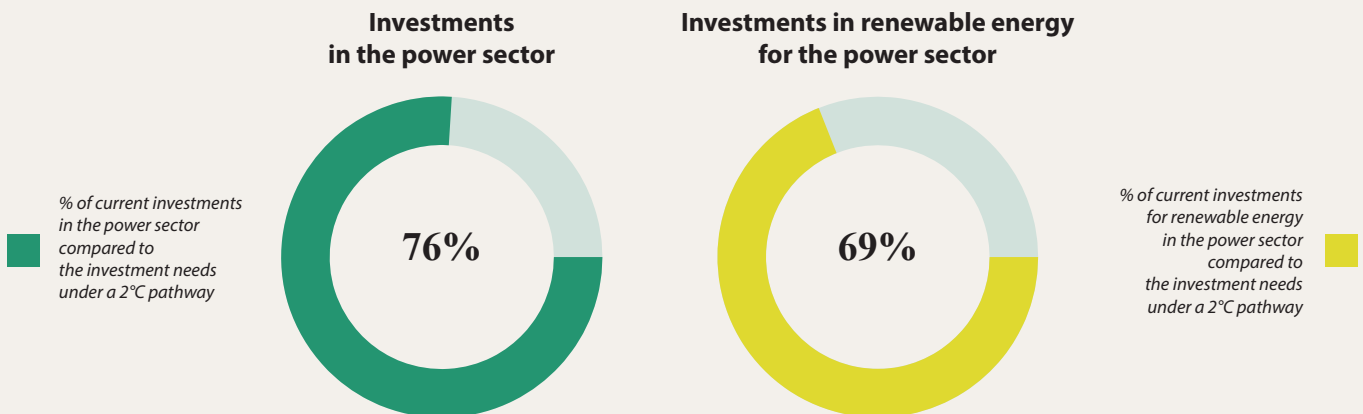
Climate Transparency rates Turkey's investment attractiveness very low to low, due to inadequate political ambition for a low-carbon transition, plans to extend coal power, and stagnant renewables development. Main barriers for successful investments are complex and time-consuming permitting processes, major grid constraints and a limited track record of private capital. Recent political instability and poor macroeconomic variables cause weak overall investment conditions.

Sources: Allianz Energy and Climate Monitor and RECAI reports

The Allianz Energy & Climate Monitor ranks G20 member states on their relative fitness as potential investment destinations for building low-carbon electricity infrastructure. The investment attractiveness of a country is assessed through four categories: Policy adequacy, Policy reliability of sustained support, Market absorption capacity and the National investment conditions. The Renewable Energy Country Attractiveness Index (RECAI) produces score and rankings for countries' attractiveness based on Macro drivers, Energy market drivers and Technology-specific drivers which together compress a set of 5 drivers, 16 parameters and over 50 datasets.

Historical investments in renewable energy and investment gap

This section shows Turkey's current investments in the overall power sector (including distribution and transmission) as well as in renewable energy expressed as the share of the total annual investments needed to be in line with a 2°C compatible trajectory.



Source: Adapted from WEIO, 2014⁽¹⁾

⁽¹⁾ WEIO (2014) compares annual average investments from 2000 to 2013 with average annual investments needed from 2015 to 2030 under a 2°C scenario

Carbon pricing mechanisms

Emissions Trading Schemes (ETS)

An ETS caps the total level of GHG emissions and allows industries to trade allowances based on their marginal abatement cost. By creating a supply and demand for allowances, an ETS establishes a market price for GHG emissions.

Carbon Tax

A Carbon tax directly sets a price on carbon by defining a tax rate on GHG emissions or – more commonly – on the carbon content of fossil fuels. Unlike an ETS, a carbon tax is a price-based instrument that pre-defines the carbon price, but not the emissions reduction outcome of a carbon tax.

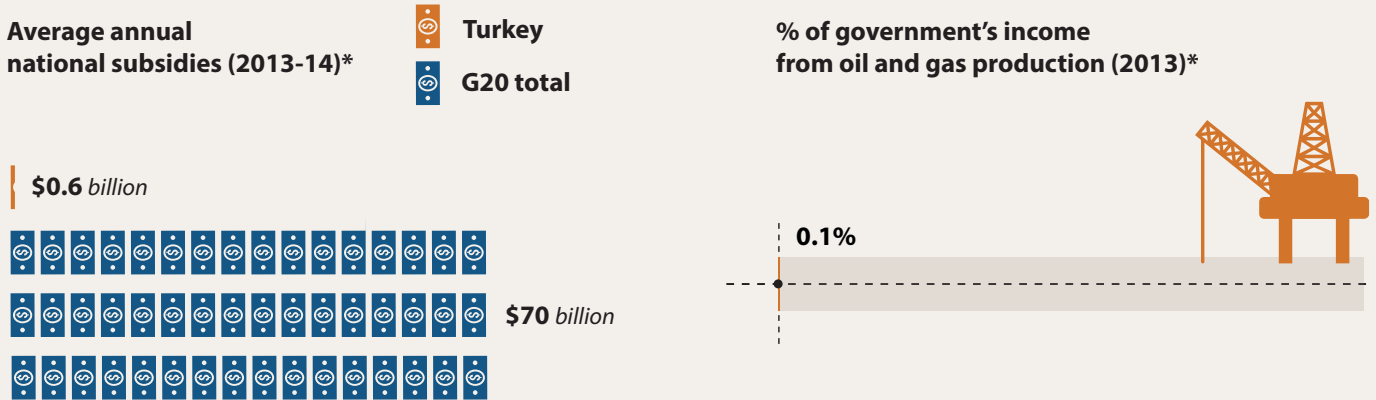
While Turkey does not yet have carbon pricing systems in place, it has started to explore opportunities to implement a national Emissions Trading Scheme.



Sources: World Bank and Ecofys, 2016; other national sources

Fossil fuel subsidies

Turkey's fossil fuel subsidies are a mix of tax exemptions and direct budgetary spending, with a large portion (nearly US\$300 million) targeted toward exploration of new fossil fuel reserves. In January 2012, the government began the New Investment Incentives Regime to subsidise oil and coal investments, including mining, exploration and power generation. The government also supports state-owned fossil fuel producers such as the Turkish Petroleum Corporation (TPAO) and Turkish Hard Coal Company (TTK). In its G20 report on rationalisation of fossil fuel subsidies, Turkey plans to remove inefficient producer side subsidies by rehabilitating TTK, reducing employment and losses, and increasing productivity.



Source: ODI, 2015

*The indicators above refer only to subsidies for fossil fuel production, and include direct spending (e.g. government budget expenditure on infrastructure that specifically benefits fossil fuels), tax expenditure (e.g. tax deductions for investment in drilling and mining equipment) and other support mechanisms (e.g. capacity mechanisms).

Public climate finance

Turkey is not listed in Annex II of the UNFCCC, and it is therefore not formally obliged to provide climate finance. While climate-related spending by multilateral development banks may exist, it has not been included in this report.