



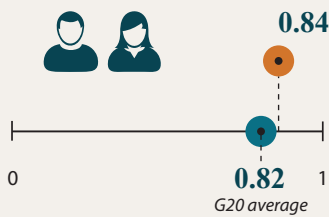
BROWN TO GREEN: G20 TRANSITION TO A LOW CARBON ECONOMY

Saudi Arabia

This country profile assesses Saudi Arabia'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).

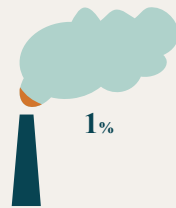


Human Development Index



Source: UNDP, data for 2015

Share of global GHG emissions



Source: World Bank Indicators, data for 2012

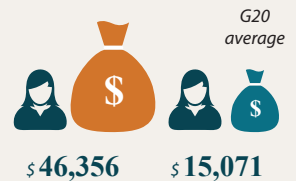
GHG emissions per capita (tCO₂e/cap)



Share of global GDP

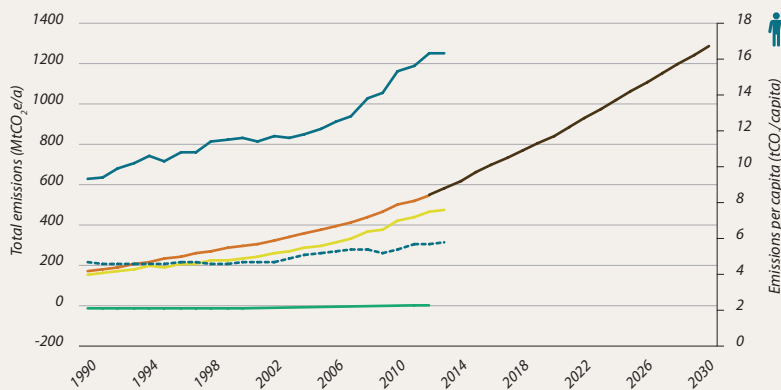


GDP per capita

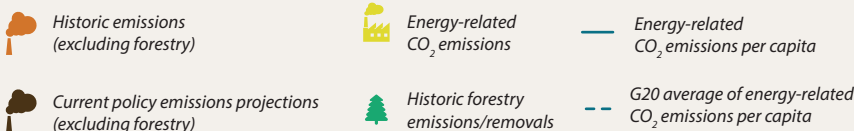


Source: IEA, data for 2013

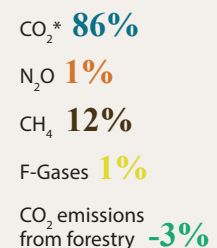
GREENHOUSE GAS (GHG) EMISSIONS



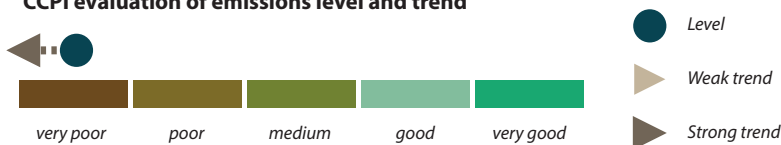
Saudi Arabia's greenhouse gas (GHG) emissions have increased rapidly, and are expected to further increase in the coming decades. The majority of the country's GHG emissions result from energy related carbon dioxide (CO₂). In the G20, Saudi-Arabia has the second highest CO₂ per capita emissions, which grew by 75% between 1990 and 2013, going from around 9 tCO₂/capita to over 16 tCO₂/capita. This development is reflected in the CCPI evaluation, which ranks Saudi Arabia among the very poor performing countries and with a negative trend.



Composition of GHG emissions



CCPI evaluation of emissions level and trend

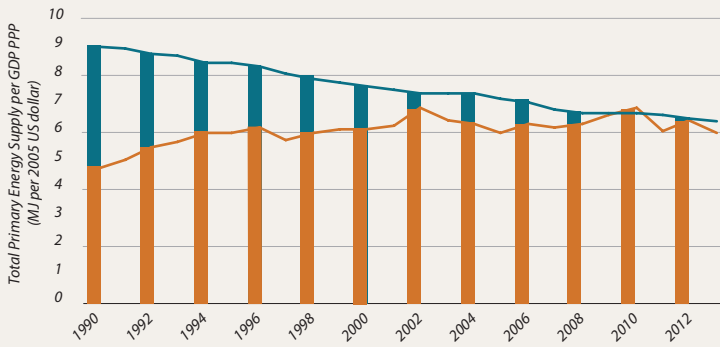


*CO₂ emissions incl. LULUCF
Source: Annex I countries: UNFCCC (2015);
Non-Annex I countries: IEA (2014) and CAT (2015)

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

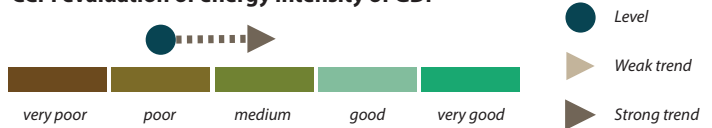
Energy intensity of the economy



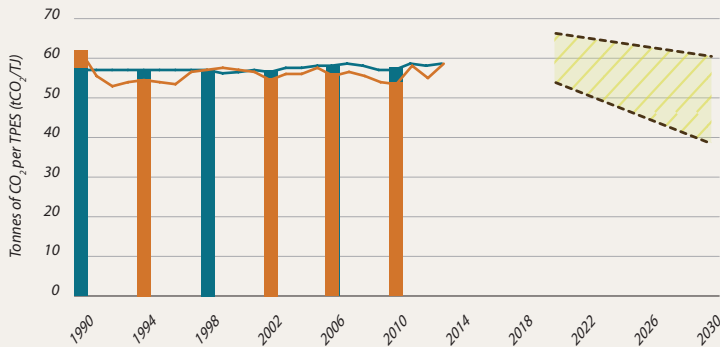
Energy intensity
Average energy intensity in G20

Source: CCPI, 2016

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

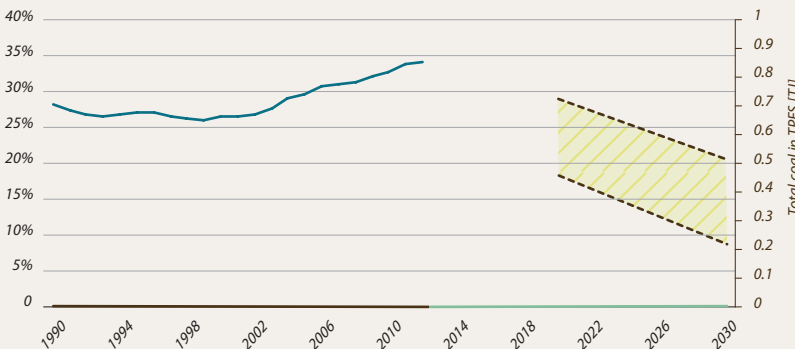
Sources: Past: CCPI; future projections: CAT

In Saudi Arabia, CO₂ emissions per primary energy supply (CO₂/TPES) dropped rapidly in the early 1990s and have remained relatively constant since then, slightly below the G20 average. The carbon intensity of the country's energy supply is evaluated as relatively poor in the CCPI, with a negative trend.

CCPI evaluation of carbon intensity of energy sector



Share of coal in Total Primary Energy Supply (TPES)



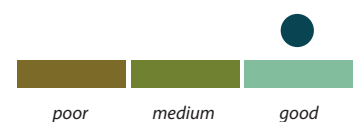
Average % of coal in G20
Total coal consumption (TJ)
Global benchmark for a 2°C pathway (min & max)
% of coal (current policy projections)

Source: CAT



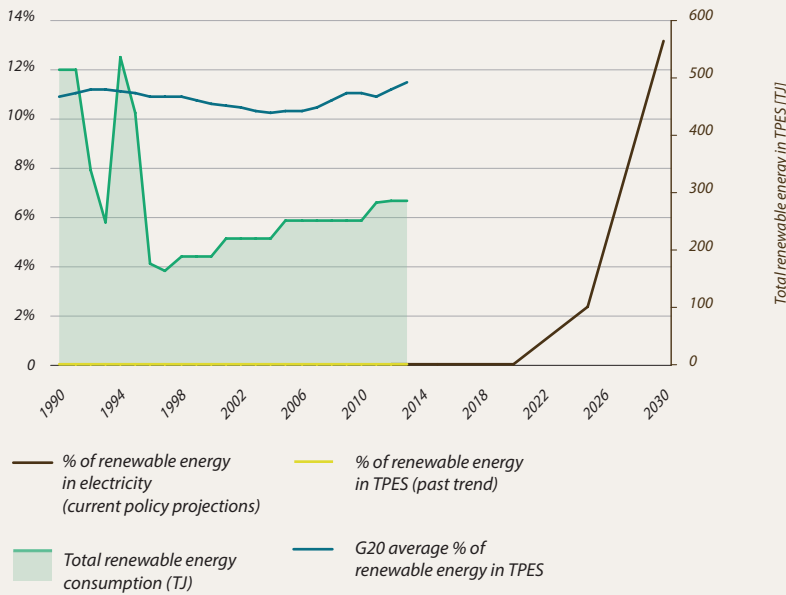
Since Saudi Arabia heavily relies on its own oil reserves, there is no coal in Saudi Arabia's primary energy supply. Further, it is not expected that coal will have any role in its future energy mix.

Evaluation of coal share in TPES



Source: own evaluation

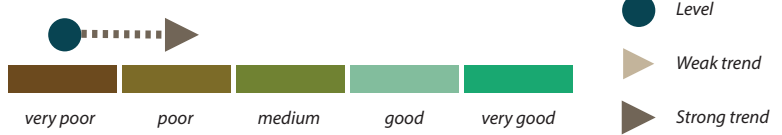
Renewable energy in TPES and electricity sector



In Saudi Arabia, the share of renewables in the primary energy supply and in electricity remains close to 0%. No positive trend has been visible in the past, resulting in a very poor rating in the CCPI. Projections based on national planned policies aiming at diversifying the energy mix and increasing the renewables share, show a potential increase in renewable energy in the future. However, these plans have recently been delayed by eight years in response to low oil prices.

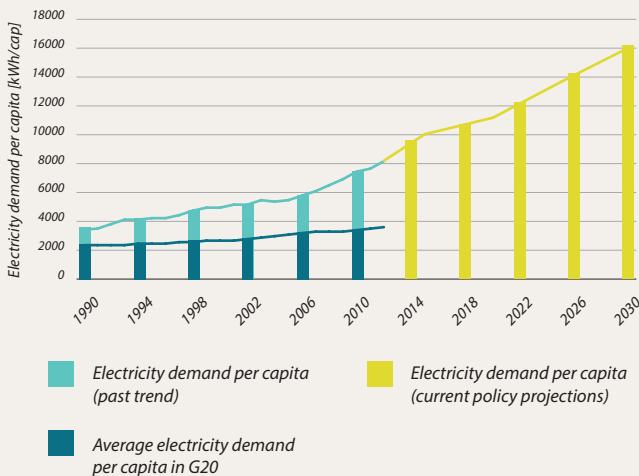
Sources: CCPI and CAT

CCPI evaluation of renewable share in TPES



Electricity demand per capita

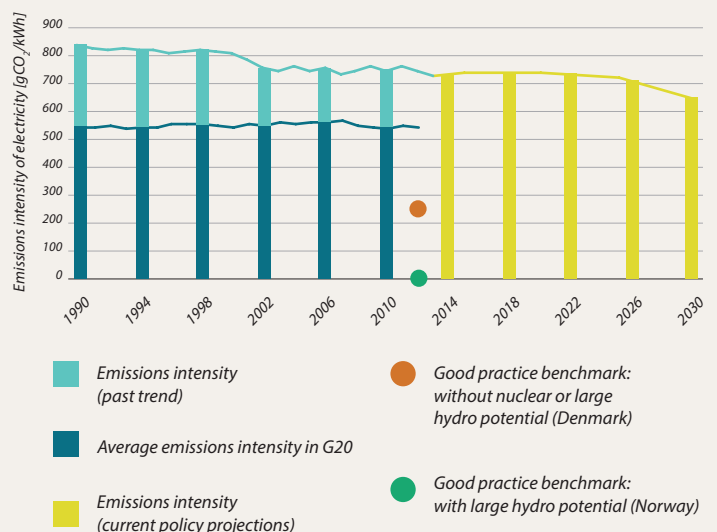
The per capita electricity demand in Saudi Arabia increased rapidly in recent years. Starting at a relatively high level, it more than doubled up to 2012, and is far above the G20 average. According to future projections, this development will continue until 2030.



Source: CAT, 2015

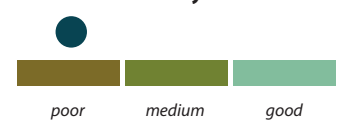
Emissions intensity of the electricity sector

Saudi Arabia's electricity emissions intensity slightly dropped between 1990 and 2000. Since then it has remained relatively constant on a level far above the G20 average. Emissions per kWh are almost three times higher than in Denmark, a good practice benchmark country with no large hydropower potential or nuclear power.



Source: CAT, 2015

Evaluation of the electricity emission intensity



Source: own evaluation

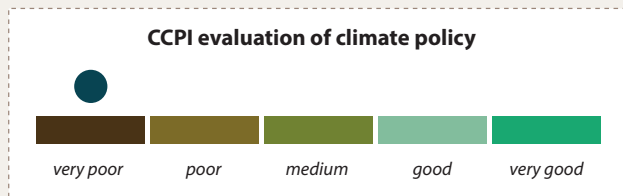
CLIMATE POLICY PERFORMANCE

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

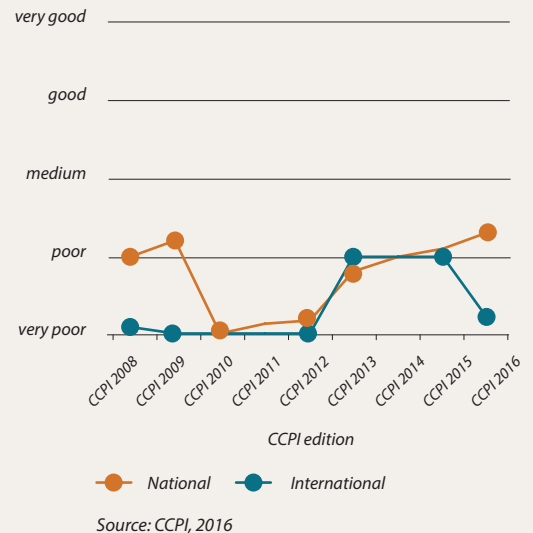
Source: Climate Policy Database, 2016



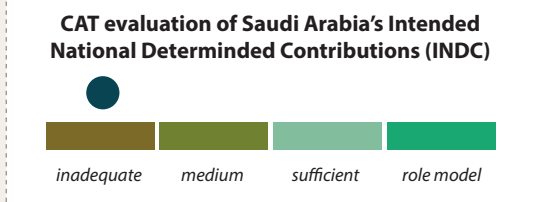
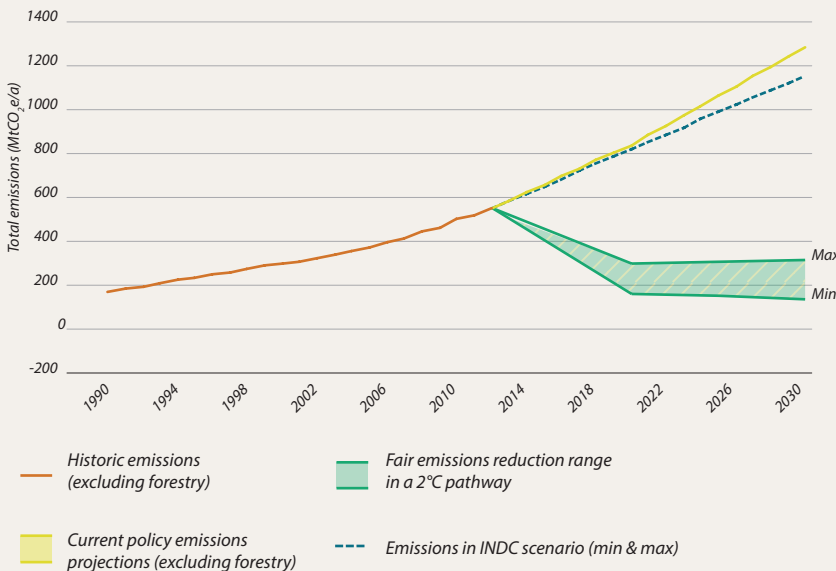
Climate policy evaluation by experts

In international climate diplomacy, Saudi Arabia has strongly defended its fossil fuel interests and has one of the worst international policy performance evaluations. At the national level, the country has made only limited effort, such as a plan to establish a national sustainable energy program.

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



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



Source: CAT, 2015

On 10 November 2015, Saudi Arabia submitted its Intended Nationally Determined Contribution (INDC), seeking to reduce its emissions annually by up to 130 MtCO₂e in 2030 through measures that have co-benefits in pursuing economic diversification from oil, while contributing to greenhouse gas abatement and adaptation to climate change. The INDC results in emissions levels at around 1,160 MtCO₂e excl. LULUCF by 2030, a 132% increase above 2010 levels, or a 600% increase above 1990 levels. Based on this target, the CAT rates Saudi Arabia "inadequate". The proposed abatement is far from being enough for Saudi Arabia to contribute fairly in limiting global warming by 2°C. To do so, Saudi Arabia would need to at least quadruple its proposed abatement and overall ambition.

Important planned policies aiming at diversifying the energy mix and to achieve 54 GW of renewable and 17 GW of nuclear energy by 2032 have been delayed by eight years in response to low oil prices. The delay appears to be linked to the country's desire to build its own renewable manufacturing business in line with its diversification strategy. Overall, we estimate this delay leads cumulatively to an additional 1 GtCO₂e emitted between 2017 and 2030 and additional emissions of 120 MtCO₂e/year after 2030, representing 0.6% of the G20 emissions gap to hold global warming below 2°C.

FINANCING THE TRANSITION

Investment attractiveness



Allianz Energy and Climate Monitor

VERY LOW

RECAI* (E&Y index)
Category (own assessment) not covered

Trend** no data

*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

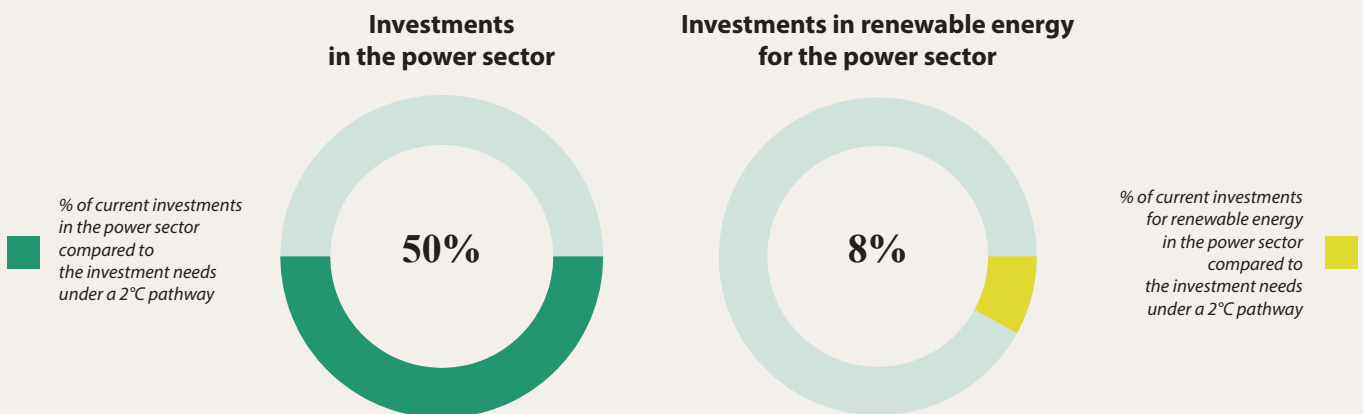
Climate Transparency rates Saudi Arabia's investment attractiveness as very low, due to poor performance in most parameters of attractiveness. This includes negligible support mechanisms to accomplish the renewable energy targets, almost inexistent absorption capacity and low general investing conditions.

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 Saudi Arabia'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.

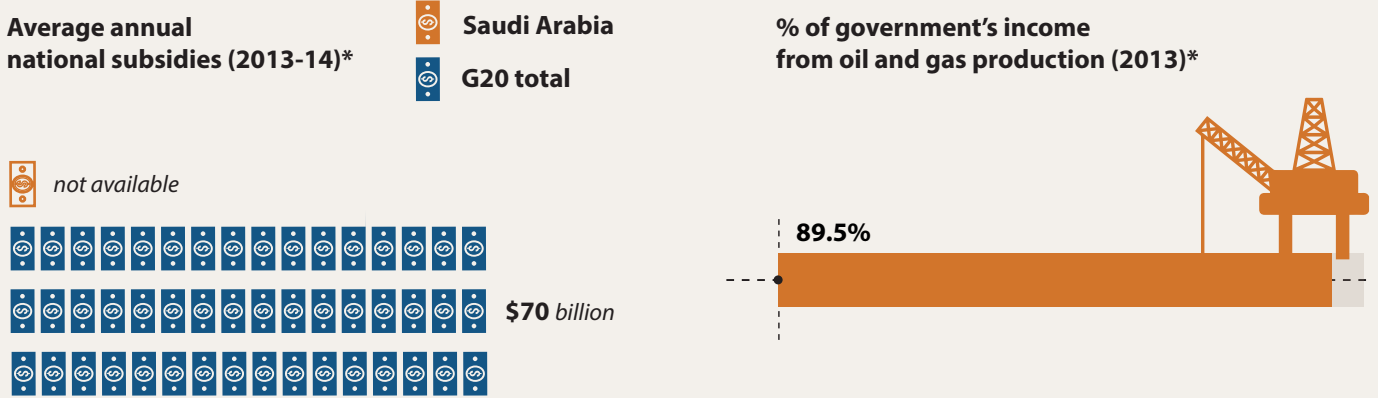
To date, Saudi Arabia does not have an emissions trading scheme (ETS) or a carbon tax either in place, or under consideration.



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

Fossil fuel subsidies

Saudi Arabia is the G20's largest fossil fuel subsidiser, and second largest globally. State-owned Saudi Aramco controls all petroleum and crude oil production capacity. Oil revenues provide over 90% of fiscal and 80% of export revenues, closely linking fossil fuel to economic growth. There is no data on the level of government support for fossil fuel industries; however, the tax code mentions a range of incentives for oil and gas producers, like accelerated depreciation and instant tax deductions. While the government has set standards for energy efficiency to reduce electricity consumption, it is yet to undertake major fossil fuel subsidy reforms and it continues to support R&D for oil and gas.



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

Saudi Arabia 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.