Saudi Arabia’s greenhouse gas (GHG) emissions are – per capita – almost three times the G20 average.

Total GHG emissions (excl. land use) have tripled since 1990 and are projected to increase further.

Greenhouse gas (GHG) emissions (incl. land use) per capita\(^1\) (tCO\(_2\)e/capita)

<table>
<thead>
<tr>
<th>Year</th>
<th>Saudi Arabia</th>
<th>G20 average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>20.6</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Source: CAT 2019; PRIMAP 2018; World Bank 2019

Saudi Arabia is not on track for a 1.5°C world.

Saudi Arabia’s fair-share range is below 376 MtCO\(_2\)e by 2030 and below 248 MtCO\(_2\)e by 2050. Under Saudi Arabia’s 2030 NDC target, emissions would only be limited to 861–1,105 MtCO\(_2\)e. 1.5°C compatibility can be achieved via strong domestic emissions reductions, supplemented with contributions to global emissions-reduction efforts. All figures are drawn from the Climate Action Tracker and exclude land use.

**1.5°C compatible pathway\(^2\)** (MtCO\(_2\)e/year)

- **2016**: 677 MtCO\(_2\)e
- **2030**: max. 376 MtCO\(_2\)e
- **2050**: max. 248 MtCO\(_2\)e

Source: CAT 2019

In 2019, Saudi Arabia raised its renewable energy target from 9.5 GW in 2023 to 58.7 GW by 2030.

At the UN climate talks in Bonn 2019, Saudi Arabia blocked acceptance of the IPCC report on 1.5°C warming.

Recent developments\(^3\)

- Transport emissions per capita in Saudi Arabia are more than double the G20 average and continue to rise
- Fossil fuels make up 100% of Saudi Arabia’s electricity mix
- Saudi Arabia provided subsidies of US$44 billion for fossil fuel in 2017

Key opportunities for enhancing climate ambition\(^3\)

- Phase out fossil fuel cars by 2035.
- Develop a long-term strategy for renewable energy that leads to net CO\(_2\) emissions in the power sector by 2050.
- Conduct a peer review, together with another G20 country, and develop a strategy to phase out subsidies by 2030.

This country profile is part of the Brown to Green 2019 report. The full report and other G20 country profiles can be downloaded at: [http://www.climate-transparency.org/g20-climate-performance/g20report2019](http://www.climate-transparency.org/g20-climate-performance/g20report2019)
Oil and gas have historically contributed more than half of Saudi Arabia’s nominal GDP. The country’s NDC prioritises diversifying its economy away from its “heavy reliance on income generated from a single resource”. The ‘Saudi Vision 2030’ was unveiled in 2016, calling for raising the share of non-oil exports from 16% to 50% of export value by 2030, as well as expanding the role of renewable energy in the Saudi energy system and localising the renewable energy and industrial equipment sectors. Some of the more ambitious goals of the Vision were revised in 2017.

Potential effects on workers and communities in the oil and gas sector are not clear, with limited evidence of public discourse on just transitions in Saudi Arabia. However, the Vision had aimed for creating 1.2 million private sector jobs by 2020, and reducing unemployment from 11.6% to 9%. More recently, at the Bangkok Climate Conference 2018, Saudi Arabia described a just transition as “central to their ecological future”.

### Human Development Index

The Human Development Index reflects life expectancy, level of education, and per capita income. Saudi Arabia ranks among the highest countries.

**Data for 2017 | Source: UNDP 2018**

### Population projections (millions)

The World Bank expects Saudi Arabia’s population to increase by about 34% by 2050.

**Source: World Bank 2019**

### Death through ambient air pollution (total ambient air pollution attributable deaths)

Almost 12,000 people die in Saudi Arabia 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 one of the highest levels in the G20.

**Data for 2016 | Source: World Health Organization 2018**

### Just Transition

Oil and gas have historically contributed more than half of Saudi Arabia’s nominal GDP. The country’s NDC prioritises diversifying its economy away from its “heavy reliance on income generated from a single resource”.

The ‘Saudi Vision 2030’ was unveiled in 2016, calling for raising the share of non-oil exports from 16% to 50% of export value by 2030, as well as expanding the role of renewable energy in the Saudi energy system and localising the renewable energy and industrial equipment sectors. Some of the more ambitious goals of the Vision were revised in 2017.

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### Gross Domestic Product (GDP) per capita

**PPP US$ const. 2018, international**

**55,120 Saudi Arabia**

**22,694 G20 average**

**Data for 2018 | Source: World Bank 2019**

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

**11,915 Saudi Arabia**

**0.8 G20 range**

### Decarbonisation Ratings

These ratings assess a country’s performance compared to other G20 countries. A high scoring reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.

**Data for 2018**

### Policy Ratings

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

**Data for 2018**

---

For more information see the Annex and Technical Note
Saudi Arabia’s GHG emissions have tripled (1990-2016) and the government’s climate targets are not in line with a 1.5°C pathway.

In 2030, global GHG emissions need to be 45% below 2010 levels and reach net zero by 2070.

Saudi Arabia’s emissions (excl. land use) tripled between 1990 and 2016 and are projected to continue growing until at least 2030. Saudi Arabia is on track to meet its NDC and may overachieve it if planned policies are implemented, indicating significant potential for the government to scale up its climate action and strengthen its NDC. Much greater emissions reductions will be required to become 1.5°C compatible.

In 2030, global GHG emissions need to be 45% below 2010 levels and reach net zero by 2070.

1.5°C Paris Agreement compatible role model

Fossil fuels still make up 100% of Saudi Arabia’s energy mix (including power, heat, transport fuels, etc). The carbon intensity of the mix has not changed over the years.
Fossil fuels still make up 100% of Saudi Arabia's energy mix (including power, heat, transport fuels, etc). The carbon intensity of the mix has not changed over the years.

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.

**Energy mix**

Total primary energy supply (PJ)

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy Supply (PJ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>0</td>
</tr>
<tr>
<td>1995</td>
<td>2,000</td>
</tr>
<tr>
<td>2000</td>
<td>4,000</td>
</tr>
<tr>
<td>2005</td>
<td>6,000</td>
</tr>
<tr>
<td>2010</td>
<td>8,000</td>
</tr>
<tr>
<td>2015</td>
<td>10,000</td>
</tr>
<tr>
<td>2018</td>
<td>12,000</td>
</tr>
</tbody>
</table>

Share in 2018

- **0%** Renewables
- **0%** Nuclear
- **38%** Gas
- **62%** Oil

**Carbon intensity of the energy sector**

Tonnes of CO₂ per unit of total primary energy supply (tCO₂/TJ)

<table>
<thead>
<tr>
<th>Year</th>
<th>Saudi Arabia</th>
<th>G20</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>61 tCO₂/TJ</td>
<td>35</td>
</tr>
<tr>
<td>1995</td>
<td>59 tCO₂/TJ</td>
<td>35</td>
</tr>
<tr>
<td>2000</td>
<td>57 tCO₂/TJ</td>
<td>35</td>
</tr>
<tr>
<td>2005</td>
<td>55 tCO₂/TJ</td>
<td>35</td>
</tr>
<tr>
<td>2010</td>
<td>53 tCO₂/TJ</td>
<td>35</td>
</tr>
<tr>
<td>2015</td>
<td>51 tCO₂/TJ</td>
<td>35</td>
</tr>
<tr>
<td>2018</td>
<td>49 tCO₂/TJ</td>
<td>35</td>
</tr>
</tbody>
</table>

**Rating of carbon intensity compared to other G20 countries**

- **Very low** (2013-2018)
- **Low** (2018)

Source: Enerdata 2019
Solar, wind, geothermal and biomass development

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

**Share of TPES in 2018**
- **Solar**: 0.00% (0.00%)
- **Wind**: 0.00% (0.00%)
- **Geothermal**: 0.00% (0.00%)
- **Biomass, excl. traditional biomass**: 0.00% (0.00%)

Solar and modern biomass together make up only 0.0001% of Saudi Arabia’s energy supply, and there is no wind or geothermal energy. The G20 average is 6%. The share has increased slightly thanks to the development of solar energy in recent years.

**Rating of share in TPES compared to other G20 countries**

**Energy supply per capita**

Total primary energy supply per capita (GJ/capita)

The level of energy supply per capita is closely related to economic development, climatic conditions and the price of energy. At 259 GJ/capita, Saudi Arabia has one of the highest levels of energy supply per capita in the G20. However, the level is decreasing at a faster rate than in most G20 countries.

**Rating of energy supply per capita compared to other G20 countries**

Source: own evaluation
SAUDI ARABIA has one of the highest levels of energy supply per capita in the G20 and a very energy-intensive economy. However, both energy supply and energy-related CO₂ emissions have begun to decrease in recent years.

**Energy intensity of the economy**

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. The energy intensity of Saudi Arabia’s economy is above the G20 average and is decreasing less (-4%, 2013-2018) than the G20.

**Energy-related CO₂ emissions**

CO₂ emissions from fuel combustion (MtCO₂/year)

The largest driver of overall GHG emissions are CO₂ emissions from fuel combustion. In Saudi Arabia, they increased up until 2014 and have slightly decreased since then. The industry sector is the largest contributor at 43%, followed by electricity generation at 30%.
Saudi Arabia is not using coal for power generation but sources 100% of its electricity from oil and gas. The share of renewables is still negligible. In order to be compatible with a 1.5°C pathway, the share of renewables needs to increase significantly.

Saudi Arabia is producing some electricity from solar, but the amount is so small that it is negligible in the power mix – 100% of electricity is produced from fossil fuels. Gas accounts for the largest share in the power mix (59%), followed by oil (41%).

For each kilowatt hour of electricity, 723 gCO₂ are emitted in Saudi Arabia. This is well above the G20 average. Emission intensity has remained constant over the past five years, reflecting the continuing high share of gas and oil in the power mix (G20 average: -11%, 2013-2018).

Emissions intensity of the power sector (gCO₂/kWh)

Saudi Arabia: 732
G20 average: 458

Share in energy-related CO₂ emissions

30% Renewables
Data for 2018 | Source: Enerdata 2019

For each kilowatt hour of electricity, 723 gCO₂ are emitted in Saudi Arabia. This is well above the G20 average. Emission intensity has remained constant over the past five years, reflecting the continuing high share of gas and oil in the power mix (G20 average: -11%, 2013-2018).

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BROWN TO GREEN: THE G20 TRANSITION TOWARDS A NET-ZERO EMISSIONS ECONOMY | 2019

SAUDI ARABIA

MITIGATION

POWER SECTOR

SAUDI ARABIA

POLICIES

Renewable energy in the power sector

In 2019, Saudi Arabia raised its renewable energy target from 9.5 GW by 2023 to 58.7 GW installed capacity by 2030. It tenders renewable energy projects under its National Renewable Energy Programme and runs a public investment fund for renewables co-financed by the SoftBank Group, ensuring the use of components from domestic manufacturing. No long-term strategy exists, however.

Source: own evaluation

Coal phase-out in the power sector

Not applicable

Source: own evaluation

MITIGATION

TRANSPORT SECTOR

Saudi Arabia’s transport emissions per capita are among the highest in the G20 but have dropped by 20% (2013-2018). Emissions from aviation are rising greatly. In order to stay within a 1.5°C limit, passenger and freight transport need to be decarbonised.

Source: own evaluation

STATUS OF DECARBONISATION

Transport energy mix

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

Share in energy-related CO₂ emissions

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

Source: IPCC SR1.5 2018

Share in 2018

Biofuels: 0.0%
Electricity: 0.0%
Gas: 0.0%
Oil: 100.0%
Coal: 0.0%

Source: Enerdata 2019

Saudi Arabia uses neither biofuels nor electricity for transport.
STATUS OF DECARBONISATION (continued)

Transport emissions per capita
(tCO2/capita, excl. aviation emissions)

Saudi Arabia: 3.21
G20 average: 1.13

Aviation emissions per capita
(tCO2/capita)

Rating trend (2011-2016)
Saudi Arabia: +20%
G20 average: +10%

Rating of transport emissions compared to other G20 countries
Rating trend (2013-2018)
Rating current level (2018)
Saudi Arabia: very high
G20 average: very low

Motorisation rate
(vehicles per 1,000 inhabitants)

133

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

no data

Passenger transport
(modal split in % of passenger km)

no data

Freight transport
(modal split in % of tonne-km)

no data

POLICIES

Phase out fossil fuel cars

Saudi Arabia does not plan to phase out fossil fuel cars but in 2016 implemented a fuel efficiency standard for cars (last updated in 2019). In 2018, its sovereign wealth fund invested US$1bn in a US-based electric vehicle (EV) manufacturer, which might lead to production hubs in the Kingdom. The government does not yet support EVs but is currently considering to invest in charging infrastructure and grid modifications.

Source: own evaluation

Phase out fossil fuel heavy-duty vehicles

Saudi Arabia has no plans for reducing absolute emissions from freight transport, and has no fuel standards in place for heavy-duty vehicles (HDVs). It currently assesses two initiatives to improve the energy efficiency of HDVs: improving the fuel economy through enforcing anti-idling and aerodynamics regulations, and accelerating the retirement of inefficient HDVs.

Source: own evaluation

Modal shift in (ground) transport

The Vision 2030 sets qualitative objectives to increase the use of public transport and improve the efficiency of railways. Measures include the establishment of the Public Transport Authority in 2012, the allocation of ca. US$27mn for public transport projects, and the Saudi Railway Master Plan aimed at the construction of 9,900 km of railway (2010-2040).

Source: own evaluation
Saudi Arabia’s building emissions – including heating, cooking and electricity use – make up a quarter of total CO₂ emissions. Per capita, building-related emissions are still rising, and current policies are insufficient.

**Share in energy-related CO₂ emissions**

- **1%** direct
- **24%** from electricity

Data for 2018 | Source: Enersda 2019

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

**STATUS OF DECARBONISATION**

- **Building emissions per capita** (incl. indirect emissions) (tCO₂/capita)
  - Saudi Arabia: 4.03
  - G20 average: 1.54
  - ↓ +0.6%  
  - ↑ +1%

Trend (2013-2018)

- **Rating of building emissions compared to other G20 countries**
  - Rating trend (2013-2018)
  - medium
  - Rating current level (2018)
  - very low

Source: own evaluation

Saudi Arabia’s building emissions – including heating, cooking and electricity use – make up a quarter of total CO₂ emissions. Per capita, building-related emissions are still rising, and current policies are insufficient.

**Residential buildings: energy use per m²** (GJ)

- no data

Source: ACEEE 2018

Building-related emissions per capita are more than double the G20 average. Similar to the G20 average, the level of emissions is slightly increasing in Saudi Arabia. This is mainly driven by low electricity prices and increasing need for cooling.

**Commercial and public buildings: energy use per m²** (GJ)

- no data

Source: ACEEE 2018

Building emissions are largely driven by how much energy is used in heating, cooling, lighting, household appliances, etc. There is no data on energy use per m² in Saudi Arabia.

**POLICIES**

- **Near-zero energy new buildings**
  - low
  - medium
  - high
  - frontrunner

Saudi Arabia has no long-term strategy for zero-energy new buildings. Mandatory energy efficiency standards and regulations apply to the residential and commercial sectors. The Saudi Green Building Forum promotes the construction of energy- and resource-efficient and environmentally responsible buildings. By 2018, it accounted for 1,218 projects.

Source: own evaluation

- **Renovation of existing buildings**
  - low
  - medium
  - high
  - frontrunner

Saudi Arabia has no building retrofit policies or strategy in place.

Source: own evaluation
SAUDI ARABIA

STATUS OF DECARBONISATION

Industry emissions intensity¹²
(tCO₂e/US$2015 GVA)

0.66
Saudi Arabia

0.51
G20 average

Trend (2011-2016)

+10.4% - 10.2%

Rating of emissions intensity compared to other G20 countries⁴

Rating trend (2011-2016)

low

Rating current level (2016)

low

Source: own evaluation

When comparing industrial emissions with the gross value added (GVA) from the industry sector, Saudi Arabia’s industry emission intensity is only slightly above G20 average, but increasing much more (+10.4%, 2011-2016) in contrast to the decreasing G20 average (-10.2%). Cement, iron and steel production are the main sources.

Carbon intensity of cement production¹³
(kgCO₂/tonne product)

no data
Saudi Arabia

668
World average

Steel production and steelmaking are significant GHG emission sources, and are challenging to decarbonise. There is no data available for Saudi Arabia.

Carbon intensity of steel production¹³
(kgCO₂/tonne product)

no data
Saudi Arabia

1,650
World average

Energy efficiency

Since 2011, Saudi Arabia has implemented an energy efficiency framework for industrial plants. The Saudi Industrial Development Fund provides soft loans for energy efficiency-related projects in industry.

Source: own evaluation
Forests cover less than 1% of Saudi Arabia’s territory.

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

1.5°C

Gross tree cover loss by dominant driver

<table>
<thead>
<tr>
<th>Year</th>
<th>Commodity-driven deforestation</th>
<th>Forestry</th>
<th>Shifting agriculture</th>
<th>Urbanisation</th>
<th>Wildfire</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>-0.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>-0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>-0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Global Forest Watch 2019
Note: 2000 tree cover extent | >30% tree canopy | these estimates do not take tree cover gain into account

There are basically no forests in Saudi Arabia.

### POLICIES

(Net) zero deforestation

Not applicable

Forests cover less than 1% of Saudi Arabia’s territory.

Source: own evaluation

### MITIGATION

Saudi Arabia’s agricultural emissions are mainly from livestock manure, digestive processes in animals, and the use of synthetic fertilizers. A 1.5°C pathway requires dietary shifts, increased organic farming, and less fertilizer use.

Global 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 fertilizers and manure) need to be reduced by 10% by 2030 and by 20% by 2050.

1.5°C

### AGRICULTURE

**GHG emissions from agriculture** (not including energy)

- Synthetic Fertilizers: 27%
- Manure: 40%
- Crop Residues: 1%
- Enteric Fermentation: 32%

In Saudi Arabia, agricultural emissions make up only a small share of total emissions. The largest sources of non-energy GHG emissions in the agricultural sector are livestock manure, digestive processes in animals (enteric fermentation), and the use of synthetic fertilizers. A shift to organic farming, more efficient use of fertilizers, and diet changes could help reduce emissions.

Data for 2016 | Source: FAOSTAT 2019
SAUDI ARABIA

→ Saudi Arabia is vulnerable to climate change and adaptation actions are needed.
→ On average, 26 fatalities and losses amounting to US$238 million occur yearly due to extreme weather events.
→ With global warming, society and its supporting sectors are increasingly exposed to extreme weather events such as extreme heat.
→ With a 3°C warming, Saudi Arabia would experience around 190 days per year when temperatures reach higher than 35°C.

ADAPTATION POLICIES

Nationally-determined contribution: Adaptation

<table>
<thead>
<tr>
<th>Targets</th>
<th>Not mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actions</td>
<td>Actions specified (sectors: water, biodiversity/ecosystems, agriculture, forestry, infrastructure)</td>
</tr>
</tbody>
</table>

Source: UNFCCC, NDC of respective country

National adaptation strategies

<table>
<thead>
<tr>
<th>Document name</th>
<th>Publication year</th>
<th>Fields of action (sectors)</th>
<th>M&amp;E process (reporting frequency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No adaptation policy</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: own research
Climate Risk Index for 1998-2017

Impacts of extreme weather events in terms of fatalities and economic losses that occurred.

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

<table>
<thead>
<tr>
<th>Water</th>
<th>% of area with increase in water scarcity</th>
<th>% of time in drought conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat &amp; Health</td>
<td>Heatwave frequency</td>
<td>Days above 35°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Own research

Agriculture

<table>
<thead>
<tr>
<th>Maize</th>
<th>Reduction in crop duration</th>
<th>Hot spell frequency</th>
<th>Reduction in rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>Reduction in crop duration</td>
<td>Hot spell frequency</td>
<td>Reduction in rainfall</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on Arnell et al 2019

National crop production

(share in % of total production quantity in tonnes)

Wheat represents the largest proportion of crop production out of the four crops analysed (maize, rice, soybeans, wheat). Wheat experiences a slight increase in hot spell frequency and a slight reduction in rainfall. It is also impacted by a drastic reduction in crop duration.

Data for 2017 | Source: FAOSTAT 2019
Saudi Arabia’s fossil fuel subsidies totalled US$44 billion in 2017, mainly for petroleum, and the country has no carbon pricing scheme.

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** | **Not 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. | X | 

**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 |  |  | X |

**Enhanced capital and liquidity requirements**

- Liquidity instruments: Mitigate and prevent market illiquidity and maturity mismatch |  |  | X |
- Lending limits: Limit the concentration of carbon-intensive exposures |  |  | X |
- Incentivise low carbon-intensive exposures |  |  | X |

**Differentiated Reserve Requirements**

- Limit misaligned incentives and canalise credit to green sectors |  |  | X |

In spite of longstanding international opposition to climate protection agreements, the Saudi financial sector is increasingly recognising the implications of transition and physical risk for investments. The Central Bank has indicated its intention to join the Sustainable Banking Network. This notwithstanding, no evidence was found of green financial policy or regulation, or formal engagement with initiatives compliant with TCFD (Task Force on Climate-related Financial Disclosures).
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 prices.

Fossil fuel subsidies

In 2017, Saudi Arabia provided US$44.6bn in fossil fuel subsidies (from US$59bn in 2010, and with a peak amount of US$72.7 in 2012 between then and now). This amount is for the estimate of consumption subsidies alone, adopting the price-gap approach (unlike the data provided for the other G20 countries in this report). In 2017, the government introduced plans to reduce consumption subsidies for gasoline, natural gas and diesel, in order to meet international prices by 2025.

Carbon revenues

No explicit carbon pricing scheme from 2007 to 2018. Saudi Arabia does not have a national carbon tax or emissions trading scheme, nor are any such schemes planned.

Carbon pricing gap

No data available for Saudi Arabia.

Data for 2017 | Source: IEA 2019

Data for 2015 | Source: OECD 2018

Data for 2019 | Source: IEA 2019

Data for 2011 to 2013 | Source: OECE 2019

Data for 2008 to 2010 | Source: OECD 2018

Data for 2014 to 2017 | Source: OECD 2018
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 coal\(^\text{16}\) (million US$)

<table>
<thead>
<tr>
<th>Domestic Finance</th>
<th>International Finance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Data year: 2016-2017 average
Source: Oil Change International 2019

Commitments to restrict public finance to coal and coal-fired power\(^\text{17}\)

<table>
<thead>
<tr>
<th>MDB level</th>
<th>National development agencies and banks</th>
<th>Domestic export credit agencies</th>
<th>Export credit restriction in OECD</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>No commitments were identified.</td>
</tr>
</tbody>
</table>

Source: own research

Provision of international public support\(^\text{18}\)

Saudi Arabia is not listed in Annex II of the UNFCCC and it is therefore not formally obliged to provide climate finance. While Saudi Arabia may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

Obligation to provide climate finance under UNFCCC

<table>
<thead>
<tr>
<th>Bilateral climate finance contributions</th>
<th>Annual average contribution (mn US$, 2015-2016)</th>
<th>Theme of support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mitigation</td>
<td>Adaptation</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: Country reporting to UNFCCC

<table>
<thead>
<tr>
<th>Multilateral climate finance contributions</th>
<th>Annual average contribution (mn US$, 2015-2016)</th>
<th>Theme of support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mitigation</td>
<td>Adaptation</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: Country reporting to UNFCCC

<table>
<thead>
<tr>
<th>Core/General Contributions</th>
<th>Annual average contribution (mn US$, 2015-2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
### ENDNOTES

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 emission 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.

The 2030 projections of GHG emissions are from the CAT’s June 2019 update and are based on implemented policies, expected economic growth or trends in activity and energy consumption. The CAT methodology does not consider GHG emissions from LULUCF due to the large degree of uncertainty inherent in this type of data, and also ensure consistency and comparability across countries.

3) See the Brown to Green 2019 Technical Note for the sources used for this assessment.

4) The Decarbonisation Ratings assess the relative performance across the G20. A high scoring reflects a relatively good efforts from a climate protection perspective but is not necessarily 1.5°C compatible. The ratings assess both the ‘current level’ and ‘recent developments’ to take account of the different starting points of different G20 countries. The ‘recent developments’ ratings compare developments over the last five available years (often 2013 to 2018).

5) The selection of policies rated and the assessment of 1.5°C compatibility are informed by the Paris Agreement; the Special Report on 1.5°C of the International Panel on Climate Change (2018), and the Climate Action Tracker (2016). The ten most important short-term steps to limit warming to 1.5°C. The table below displays the criteria used to assess a country’s policy performance. See the Brown to Green Report 2019 Technical Note for the sources used for this assessment.

### Table: Policies vs. 1.5°C

<table>
<thead>
<tr>
<th>Category</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Fr ontrunner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Renewable energy in power sector</strong></td>
<td>No policy to increase the share of renewables</td>
<td>Some policies</td>
<td>Policies and longer-term strategy to target to significantly increase the share of renewables</td>
<td>Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place</td>
</tr>
<tr>
<td><strong>Coal phase-out in power sector</strong></td>
<td>No target or policy in place for reducing coal</td>
<td>Some policies</td>
<td>Policies + coal phase-out decided</td>
<td>Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)</td>
</tr>
<tr>
<td><strong>Phase out fossil fuel cars</strong></td>
<td>No policy for reducing emissions from light-duty vehicles</td>
<td>Some policies (e.g. energy/emissions performance standards or bonus/malus support)</td>
<td>Policies + national target to phase out fossil fuel light-duty vehicles</td>
<td>Policies + ban on new fossil-based light-duty vehicles by 2035 worldwide</td>
</tr>
<tr>
<td><strong>Phase out fossil fuel heavy-duty vehicles</strong></td>
<td>No policy</td>
<td>Some policies (e.g. energy/emissions performance standards or support)</td>
<td>Policies + strategy to reduce absolute emissions from freight transport</td>
<td>Policies + innovation strategy to phase out emissions from freight transport by 2050</td>
</tr>
<tr>
<td><strong>Modal shift in (ground) transport</strong></td>
<td>No policies</td>
<td>Some policies (e.g. support programmes to shift to rail or non-motorised transport)</td>
<td>Policies + longer-term strategy</td>
<td>Policies + longer-term strategy consistent with 1.5°C pathway</td>
</tr>
<tr>
<td><strong>Near zero-energy new buildings</strong></td>
<td>No policies</td>
<td>Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)</td>
<td>Policies + national strategy for near zero-energy new buildings</td>
<td>Policies + national strategy for all new buildings to be near zero-energy by 2020 (OECD countries) or 2025 (non-OECD countries)</td>
</tr>
<tr>
<td><strong>Retrofitting existing buildings</strong></td>
<td>No policies</td>
<td>Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)</td>
<td>Policies + retrofitting strategy</td>
<td>Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020</td>
</tr>
<tr>
<td><strong>Energy efficiency in industry</strong></td>
<td>No policies</td>
<td>Mandatory energy efficiency policies cover more than 26-50% of industrial energy use</td>
<td>Mandatory energy efficiency policies cover 51–100% of industrial energy use</td>
<td>Policies + strategy to reduce industrial emissions by 75%–90% from 2010 levels by 2050</td>
</tr>
<tr>
<td><strong>(Net) zero deforestation</strong></td>
<td>No policy or incentive to reduce deforestation in place</td>
<td>Some policies (e.g. incentives to reduce deforestation or support schemes for afforestation/reforestation in place)</td>
<td>Policies + national target for reaching net zero deforestation</td>
<td>Policies + national target for reaching zero deforestation by 2020s or for increasing forest coverage</td>
</tr>
</tbody>
</table>
6) The 1.5°C benchmarks are based on the Special Report on 1.5°C of the International Panel on Climate Change (2018). See the Brown to Green 2019 Technical Note for the specific sources used for this assessment.

7) Total primary energy supply data displayed in this Country Profile does not include non-energy use values. Solid fuel biomass in residential use has negative environmental and social impacts and is shown in the category ‘other’.

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

9) The category ‘electricity and heat’ covers CO₂ emissions from power generation and from waste heat generated in the power sector. The category ‘other energy use’ covers energy-related CO₂ emissions from extracting and processing fossil fuels (e.g., drying lignite).

10) This indicator shows transport emissions per capita, not including aviation emissions.

11) This indicator adds up emissions from domestic aviation and emissions from international aviation bunkers in the respective country. Emissions by aircrafts in the higher atmosphere lead to a contribution to climate change greater than emissions from burning fossil fuels. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.

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

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

14) 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. The definition of ‘forest’ used for this indicator is also not identical with the definition used for the indicator on page 3.

15) ‘Effective carbon rates’ are the total price that applies to CO₂ emissions, and are made up of carbon taxes, specific taxes on energy use and the price of tradable emission permits. The carbon pricing gap is based on 2015 energy taxes and is therefore likely to be an underestimate, as taxation has tended to increase in countries over time.

16) The database used to estimate public finance for coal is a bottom-up database, based on information that is accessible through various online sources, and is therefore incomplete. For more information, see the Brown to Green 2019 Technical Note.

17) See the Brown to Green 2019 Technical Note for the sources used for this assessment.

18) Climate finance contributions are sourced from Biennial Party reporting to the UNFCCC. Refer to the Brown to Green Report 2019 Technical Note for more detail.

For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: http://www.climate-transparency.org/g20-climate-performance/g20report2019