South Africa should submit a revised NDC in 2020 with much more ambitious targets.

South Africa needs to reduce its emissions to below 348 MtCO₂e by 2030 and to below 224 MtCO₂e by 2050 to be within a 1.5°C ‘fair-share’ pathway. South Africa’s NDC would only limit its emissions to between 415 and 631 MtCO₂e (adjusted to excl. land use) in 2025 and 2030. All figures are drawn from the Climate Action Tracker and exclude land use emissions.

**NOT ON TRACK FOR A 1.5°C WORLD**

**5-year trend (2012-2017)**

- **South Africa**: -10.3%
- **G20 average**: -2.3%

**PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS ABOVE G20 AVERAGE**

Total GHG emissions (excl. land use) have increased by 41% since 1990, but emissions in recent years have been almost constant, owing largely to low economic growth and a sharp rise in electricity prices.

**KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION**

- **INCREASE RENEWABLE ENERGY**: Ramping up procurement processes for renewables as outlined in electricity expansion plans in the IRP and exploiting the decreasing cost of renewables would increase the proportion of renewables in the power sector.
- **SUPPORTING COAL PLANT COMMUNITIES**: South Africa could adopt a just energy transition plan to phase coal out of the economy while still supporting communities impacted by retirement of aging coal plants.
- **REVISE NDC WITH MORE AMBITIOUS TARGETS**: South Africa should submit a revised NDC in 2020 with much more ambitious targets.

**RECENT DEVELOPMENTS**

- **During COVID-19 lockdown South Africa faced an oversupply of generation, so state electricity company, Eskom, issued curtailment notices to 22 operational wind farms. But since lifting restrictions, the shortage of capacity supply experienced before COVID-19 returned, as did the pre-pandemic rolling blackouts.**
- **South Africa has recently announced the procurement of 6.8GW of renewable energy.**
- **South Africa approved a low emissions development strategy with a goal to achieve net-zero emissions by 2050, although it does not provide for the phase-out of coal power.**

**SOUTH AFRICA**

**PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS ABOVE G20 AVERAGE**

- **South Africa**: 8.85 tCO₂e/capita
- **G20 average**: 7.32 tCO₂e/capita

**5-year trend (2012-2017)**

- **South Africa**: -10.3%
- **G20 average**: -2.3%

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

**NOT ON TRACK FOR A 1.5°C WORLD**

South Africa needs to reduce its emissions to below 348 MtCO₂e by 2030 and to below 224 MtCO₂e by 2050 to be within a 1.5°C ‘fair-share’ pathway. South Africa’s NDC would only limit its emissions to between 415 and 631 MtCO₂e (adjusted to excl. land use) in 2025 and 2030. All figures are drawn from the Climate Action Tracker and exclude land use emissions.

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- **G20 average**: 7.32 tCO₂e/capita

**5-year trend (2012-2017)**

- **South Africa**: -10.3%
- **G20 average**: -2.3%

**South Africa 1.5°C ‘fair-share’ pathway (MtCO₂e/year)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Ambition gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>max 533 MtCO₂e</td>
<td>533 MtCO₂e</td>
</tr>
<tr>
<td>2025</td>
<td>max 348 MtCO₂e</td>
<td>533 MtCO₂e</td>
</tr>
<tr>
<td>2030</td>
<td>max 224 MtCO₂e</td>
<td>533 MtCO₂e</td>
</tr>
</tbody>
</table>

**Source:** Climate Action Tracker, 2019

References: Nordling, 2020; Smith, 2020

**Sources:** Deign, 2020; Stoddard, 2020; Lo, 2020

**CORONAVIRUS RECOVERY**

South Africa responded to COVID-19 with an early lockdown, just three weeks after its first reported case on 5 March 2020. This quick response managed to prevent an exponential initial outbreak, but the virus has continued to spread, greatly impacting the most vulnerable and exacerbating problems in a healthcare system already coping with HIV and TB epidemics. In April 2020, the government announced a USD 26bn stimulus package in response to COVID-19, almost 10% of South Africa’s GDP.

References: Nordling, 2020; Smith, 2020
SOcio-economic Context

Human Development Index

The Human Development Index reflects life expectancy, level of education, and per capita income. South Africa ranks high.

Population and urbanisation projections (in millions)

South Africa’s population is expected to increase by about 27% by 2050 and to become increasingly more urbanised.

Death rate attributable to air pollution

Almost 23,000 people die in South Africa 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 falls in the middle of the G20 range.

Just Transition

South Africa’s energy sector is the most coal-dependent in the G20. The country has high levels of poverty and unemployment, and has explicitly recognised a just transition as a priority in national policy and its NDC. The coal mining sector employs over 80,000 workers, concentrated in regions with higher than average unemployment levels, making the transition more challenging.

In 2019, The National Planning Commission has initiated a social dialogue process to reach pathways for a just transition. A series of multi-stakeholder dialogues has identified key priorities, including analysing employment vulnerabilities of affected workers and identifying pilot “hotspots” for intervention (such as closing mines), however, explicit transition policies have yet to be developed.

Reference: Lenferna, 2020
1. ADAPTATION
ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE

South Africa is vulnerable to climate change and adaptation actions are needed. On average, 44 fatalities and almost USD 646m losses occur yearly 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.

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

- **High Death rate**
  - **RANKING 14th in the G20**

Annual average losses (USD mn PPP)

- **High Losses**
  - **RANKING 9th in the G20**

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

Impact ranking scale:

Very low | Low | Medium | High | Very high

**WATER**

- % of area with increase in water scarcity
- % of time in drought conditions

**HEAT AND HEALTH**

- Heatwave frequency
- Days above 35°C

**AGRICULTURE**

- Reduction in crop duration
- Hot spell frequency
- Reduction in rainfall


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 simplifi cations. They do not refl ect local impacts within the country. Please see technical note for further information.

**CORONAVIRUS RECOVERY**

COVID-19 has exacerbated water supply issues in South Africa, through access challenges and an increased need for handwashing. The government has responded by sending water tanks and trucks to villages and townships and has indicated its intention to pursue more long-term solutions such as reservoirs and boreholes. If it follows through, these long-term interventions will provide critical services to areas affected by climate change-driven drought.

Reference: Harrisberg and Ndlovu, 2020
Adaptation readiness

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

South Africa’s observed adaptation readiness between 2000 and 2015 is well below the G20 average and declining. Socio-economic developments in line with SSP1 would produce improvements in readiness to bring it in line with the 2015 G20 average around 2040. Other measures, as represented by SSP2 and SSP3, would continue to undermine its readiness to adapt in the long term.

The readiness component of the Index created by the Notre Dame Global Adaptation Initiative (ND-GAIN) encompasses social economic and governance indicators to assess a country’s readiness to deploy private and public investments in aid of adaptation. The index ranges from 0 (low readiness) to 1 (high readiness).

The overlaid SSPs are qualitative and quantitative representations of a range of possible futures. The three scenarios shown here in dotted lines are qualitatively described as a sustainable development-compatible scenario (SSP1), a middle-of-the-road (SSP2) and a ‘Regional Rivalry’ (SSP3) scenario. The shaded area delineates the G20 average in 2015 for easy reference.

Source: Andrijevic et al., 2020

ADAPTATION POLICIES

National Adaptation Strategies

<table>
<thead>
<tr>
<th>Document name</th>
<th>Publication year</th>
<th>Fields of action (sectors)</th>
<th>M&amp;E process</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Climate Change Adaptation Strategy</td>
<td>2018</td>
<td>Agriculture, Biodiversity, Coastal areas and fishing, Education and research, Energy and industry, Finance and insurance, Forestry, Health, Infrastructure, Tourism, Transport, Urbanism, Water</td>
<td>Annual reporting and update of strategy every five years</td>
</tr>
</tbody>
</table>

Nationally Determined Contribution (NDC): Adaptation

Targets

Six targets specified: develop national adaptation plan; mainstream adaptation into development; build institutional capacity; develop early warning systems; develop vulnerability assessment and needs framework; communicate investments.

Actions

Actions specified (sectors not mentioned)
2. 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

South Africa’s GHG emissions have increased by 41% (1990-2017) and the government’s climate targets for 2030 are not in line with a 1.5°C pathway.

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.

Source: Rogelj et al., 2018

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy</th>
<th>Industrial processes</th>
<th>Agriculture</th>
<th>Waste</th>
<th>Other</th>
<th>Historical emissions/ removals from land use</th>
<th>Total emissions (excl. land use), historic and projected</th>
<th>NDC target</th>
<th>1.5°C ‘Fair-share’ range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
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<td>2050</td>
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</tbody>
</table>

Sources: Gütschow et al., 2019; Climate Action Tracker, 2020

Energy-related CO₂ emissions by sector

<table>
<thead>
<tr>
<th>Year</th>
<th>CO₂ from fuel combustion (MtCO₂/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>200</td>
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<tr>
<td>1995</td>
<td>200</td>
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<td>2015</td>
<td>200</td>
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<tr>
<td>2019</td>
<td>200</td>
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</tbody>
</table>

* Other energy-related sectors’ covers energy-related CO₂ emissions from extracting and processing fossil fuels. Due to rounding, some graphs may sum to slightly above or below 100%.

Sources: Enerdata, 2020

CORONAVIRUS RECOVERY

Prior to COVID-19, South Africa suffered from power generation problems leading to frequent power shortages; however, with reduced economic activity under lockdown, the country faced an oversupply of generation. In response, state electricity company, Eskom, issued curtailment notices to 22 operational wind farms. With the economy now partially reopened, South Africa has returned to load-shedding due to inoperative capacity and frequent breakdowns, even though there is far more capacity than needed.

Reference: Deign, 2020
**ENERGY OVERVIEW**

Fossil fuels still make up around 92% of South Africa’s energy mix (including power, heat, transport fuels, etc) – this is among the highest in the G20. Energy supply from renewables has increased dramatically over the last two decades, but still makes up a tiny share of the overall mix.

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

*Source: Rogelj et al., 2018*

### Energy Mix

#### Total primary energy supply (PJ)

![Energy Mix Chart](chart.png)

*Source: Enerdata, 2020*  
*Due to rounding, some graphs may sum to slightly above or below 100%.*

Fossil fuels (oil, coal and gas) still make up 92% of the South African energy mix, higher than the G20 average.

### Solar, Wind, Geothermal, and Biomass Development

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

![Solar, Wind, Geothermal, and Biomass Development Chart](chart2.png)

*Source: Enerdata, 2020*  
*Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts. Due to rounding, some graphs may sum to slightly above or below 100%.*

Solar, wind, geothermal and biomass account for 3% of South Africa’s energy supply – the G20 average is 6%. The share in total energy supply has increased by around 25% from 2014 to 2019 in South Africa. Bioenergy (for electricity and heat) makes up the largest share.

*Source: Enerdata, 2020*

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

5-year trend (2014-2019):  
*Medium*

Current year (2019):  
*Low*

*Source: own evaluation*
**Carbon Intensity of the Energy Sector**

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

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 South Africa is 97 GJ/capita, equal to the G20 average, and is decreasing (-5.2%, 2014-2019) in contrast to the increasing G20 average (+1.9%).

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

5-year trend (2014-2019): High
Current year (2019): Medium

*Source: own evaluation*

---

**Energy Use per Capita**

*Energy use per capita in South Africa is 97 GJ/capita, equal to the G20 average, and is decreasing (-5.2%, 2014-2019) in contrast to the increasing G20 average (+2%).

*Source: own evaluation*

---

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

5-year trend (2014-2019):
Current year (2019):

*Source: own evaluation*

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**Energy Intensity of the Economy**

*TPES per capita (GJ/capita): 5-year trend (2013-2018)*

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

As of 2018, South Africa’s energy intensity is one of the highest in the G20 and is decreasing slower than the G20 average (-12%, 2013-2018).

*Decarbonisation rating: energy intensity compared to other G20 countries*

5-year trend (2013-2018):
Current year (2018):

*Source: own evaluation*
In 2019, South Africa still produced 88% of electricity from coal. South Africa does not have a coal phase-out policy or plan and is, therefore, not in line with a 1.5°C limit. Given the declining costs of renewables, it needs to move faster.

**STATUS OF DECARBONISATION**

**Electricity mix**

South Africa is increasingly producing power from renewables, but these still only make up 6% of the power mix. The majority of additions have been in hydropower and onshore wind, with slower uptake of solar. The level of coal power has hardly decreased and still accounts for 88% of the power mix.

Note: Pumped hydropower used for storage makes up the majority of hydropower in this figure (5,182 GWh of pumped hydropower out of 5,881 GWh of total hydropower generation in 2019). It is important to note that the majority of pumped hydropower in South Africa is charged by coal-fired power plants, usually at night, and during times of low demand.

**Share of renewables in power generation (incl. large hydro)**

Decarbonisation rating: share of renewables compared to other G20 countries

- **5-year trend (2014-2019):**
  - South Africa: +158%
  - G20 average: +19.5%

Sources: Enerdata, 2020
**Emissions intensity** of the power sector

Country vs G20 average (gCO₂/kWh)

- **South Africa**: 879 gCO₂/kWh
- **G20 average**: 449 gCO₂/kWh

For each kilowatt hour of electricity produced, 879 gCO₂ are emitted in South Africa, almost twice the G20 average. The emissions-intensity has only dropped marginally because the use of fossil fuels for power generation has barely dropped (still 88% of the power mix).

*Source: Enerdata 2020*

**Decarbonisation rating: emissions intensity compared to other G20 countries**

- **5-year trend (2014-2019):**
  - **South Africa**: -9.8%
  - **G20 average**: -10.3%

- **Current year (2019):**
  - **South Africa**: Very low
  - **G20 average**:

*Source: own evaluation*

**POLICY ASSESSMENT**

**Renewable energy** in the power sector

South Africa’s 2019 Integrated Resource Plan proposes an expansion of renewable energy capacity from a current total of 3,800 MW (excluding large hydro) to a total of 26,700 MW (plus a projected 6,000 MW in distributed PV) in 2030. No 2050 renewables target has been adopted so far.

*Reference: own evaluation*

**Coal phase-out** in the power sector

South Africa does not have a coal phase-out policy or plan.

In addition to almost 6,000 MW of already-committed coal capacity still to be added to the grid, the 2019 Integrated Resource Plan includes investment in 1,500 MW of new coal plants before 2030. South Africa’s current coal fleet would then mainly retire in the 2030s and 2040s, with several plants remaining operational in 2050.

*Reference: own evaluation*
**TRANSPORT SECTOR**

Emissions from energy used to transport people and goods

Per capita emissions from transport in South Africa are decreasing, while in the G20, they are increasing. **45% of passenger transport is by private car, and 85% of freight transport is on the road in South Africa.** Both sectors are still dominated by fossil fuels, and electric vehicles make up only 0.04% of car sales. To stay within a 1.5°C limit, passenger and freight transport need to be decarbonised.

**Share in energy-related CO₂ emissions from transport sector**

- Direct emissions: 12%
- Electricity-related emissions: 0.88%

**COMPATIBILITY**

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

Source: Rogelj et al., 2018

---

**STATUS OF DECARBONISATION**

**Transport energy mix**

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Oil (PJ/year)</th>
<th>Electricity (PJ/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>1993</td>
<td>110</td>
<td>0</td>
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<td>1996</td>
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<td>2017</td>
<td>190</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>200</td>
<td>0</td>
</tr>
</tbody>
</table>

**Source:** Enerdata, 2020

Electricity and biofuels make up only 2% of the energy mix in transport; however, in 2020, South Africa adopted a new regulatory framework for biofuels.

**Note:** Oil includes coal-to-liquids.

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

South Africa: 1.00, G20 average: 1.16

**Decarbonisation rating: transport emissions compared to other G20 countries**

- 5-year trend (2013-2018):
  - South Africa: -6.4%
  - G20 average: +5.5%

- Current year (2018):
  - G20 average: Medium

Source: own evaluation

---

Due to rounding, some graphs may sum to slightly above or below 100%.
**Aviation emissions per capita**

<table>
<thead>
<tr>
<th>Country</th>
<th>Emissions (tCO₂/capita)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>0.15</td>
</tr>
<tr>
<td>G20 average</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Data for 2017. Source: Enerdata, 2020

**Decarbonisation rating: aviation emissions compared to other G20 countries**

- **5-year trend (2012-2017):** Low
- **Current year (2017):** Medium

Source: own evaluation

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

- **South Africa:** + 27.1%
- **G20 average:** + 18.7%

Source: own evaluation

---

**Motorisation rate**

- **120 VEHICLES PER 1,000 INHABITANTS (2014)**

45% of the kilometres travelled is by car, but only 0.04% of new car sales are electric vehicles in South Africa.

Source: Vieweg et al., 2018

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

- **2018:** 0.04%

Electric vehicles

Source: IEA, 2019

**Passenger transport (modal split in % of passenger-km)**

- **Road/bus:** 47%
- **Rail:** 3%
- **Road/car:** 51%

Source: Vieweg et al., 2018

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

- **Road:** 85%
- **2014:** 15%

Source: Vieweg et al., 2018

---

**POLICY ASSESSMENT**

**Phase out fossil fuel cars**

South Africa has no plan to phase out fossil fuel vehicles, and no energy or emissions standards for vehicles, apart from an emissions-related tax on vehicle purchases and the carbon tax. The 2018 Green Transport Strategy proposes a range of measures to promote shifting to low-emission vehicles and introduce vehicle emissions standards.

Reference: own evaluation

**Phase out fossil fuel heavy-duty vehicles**

South Africa has not adopted a target to phase out emissions from freight transport, nor are there energy or carbon emission standards for heavy-duty vehicles. However, it has passed the Biofuels Regulatory Framework which aims to increase the penetration of biofuels in the national fuel pool. The Framework has been criticised for not providing adequate protections for food security and biodiversity, among other shortcomings.

Reference: own evaluation

**Modal shift in (ground) transport**

South Africa’s Green Transport Strategy (2018-2050) aims for a 5% reduction of transport emissions by 2050, shifting 30% of freight transport from road to rail, and 20% of passenger transport from private cars to public transport and eco-mobility transport within seven years of implementation. There are support schemes for promoting public transport. Detailed programmes for implementing the strategy are lacking.

Reference: own evaluation
BUILDING SECTOR

Emissions from energy used to build, heat and cool buildings

South Africa’s direct building emissions make up just 8% of total CO₂ emissions. Per capita, building-related emissions are just slightly above the G20 average.

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

Source: Enerdata, 2020

15% Electricity-related emissions
8% Direct emissions

COMPATIBILITY

1.5°C

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

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION

Building emissions per capita

(incl. indirect emissions) (tCO₂/capita)

<table>
<thead>
<tr>
<th>Source</th>
<th>2019</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>1.80</td>
<td>2.39</td>
</tr>
<tr>
<td>G20 average</td>
<td>1.48</td>
<td>1.89</td>
</tr>
</tbody>
</table>

Building-related emissions per capita are just above the G20 average. While G20 per capita building emissions have increased on average, South Africa has decreased per capita building emissions (-1.4%, 2014-2019).


-1.40% South Africa
+1.82% G20 average

Decarbonisation rating: building emissions compared to other G20 countries

5-year trend (2014-2019): Medium
Current year (2019): Medium

Source: own evaluation

POLICY ASSESSMENT

Near zero energy new buildings

High

South Africa’s National Development Plan sets a goal for zero-emissions buildings by 2030. The draft National Energy Efficiency Strategy foresees a 54% improvement in average energy performance of new commercial buildings by 2030, compared to the 2015 baseline. There are ambitious mandatory energy building codes for new residential and non-residential buildings. The building codes will need to be policed for effective implementation.

Reference: own evaluation

Renovation of existing buildings

Medium

There are no mandatory building retrofit policies but the government has introduced a five-year project to retrofit 1,450 buildings. The draft National Energy Efficiency Strategy foresees a 20% improvement in energy performance of the residential building stock.

Reference: own evaluation
Industry-related emissions make up 14% of direct CO₂ emissions in South Africa and have remained relatively constant over the last two decades in absolute terms.

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

Share in energy-related CO₂ emissions from industrial sector

<table>
<thead>
<tr>
<th>Source: Enerdata, 2020</th>
</tr>
</thead>
</table>

14% Direct emissions
26% Electricity-related emissions

Industry emissions intensity

<table>
<thead>
<tr>
<th>tCO₂e/USD2015 GVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.74 South Africa</td>
</tr>
<tr>
<td>0.71 G20 average</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Source: own evaluation</th>
</tr>
</thead>
</table>

+1% South Africa
-12% G20 average

Carbon intensity of cement production

<table>
<thead>
<tr>
<th>kgCO₂/tonne product</th>
</tr>
</thead>
<tbody>
<tr>
<td>632 South Africa</td>
</tr>
<tr>
<td>614 World average</td>
</tr>
</tbody>
</table>

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

Carbon intensity of steel production

<table>
<thead>
<tr>
<th>kgCO₂/tonne product</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,295 South Africa</td>
</tr>
<tr>
<td>1,900 World average</td>
</tr>
</tbody>
</table>

Data for 2016. Sources: World Steel Association, 2018; Climate Action Tracker, 2020

The draft Energy Efficiency Strategy envisages reducing the energy consumption of manufacturing by 16% by 2030 compared to 2015. The Industrial Energy Efficiency Programme (2016-2020) aims at direct energy savings of 1,000 GWh through energy management measures. The programme has been highly successful in reducing energy consumption in the past. Additionally, the 12L tax incentive promulgated in 2013 provides an allowance for businesses to implement energy-efficiency savings. The incentive was increased from a tax deduction of 45c/KWh saved on energy consumption to 95c/KWh. Higher electricity prices push industrial consumers towards cheaper forms of energy, mainly coal.
LAND USE SECTOR

Emissions from changes in the use of the land

South Africa’s land sector is currently a net carbon sink, despite decreasing forest cover, partly due to the growing importance of the timber industry. To stay within the 1.5°C limit, South Africa will need to further enhance its current land sector sink by increasing afforestation and promoting soil carbon enhancement on grasslands and on savanna.

Global tree-cover loss

No data available

POLICY ASSESSMENT
Target for net-zero deforestation

South Africa’s land sector is currently a carbon sink. There is significant scope to enhance the sink, which could play an important role in a future net-zero emissions target.

Reference: own evaluation

AGRICULTURE SECTOR
Emissions from agriculture

South Africa’s agricultural emissions are mainly from livestock manure and digestive processes in animals, and the use of synthetic fertilisers. A 1.5°C pathway requires dietary shifts, increased organic farming and less fertiliser 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 fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

Source: Rogelj et al., 2018

Emissions from agriculture (excluding energy)

In South Africa, the largest sources of GHG emissions in the agricultural sector are livestock related – from manure and digestive processes in animals (enteric fermentation) – and to a lesser extent, the use of synthetic fertilisers. A shift to best practice environmental land use management (e.g., organic farming, reduced tillage, use of biodigesters), more efficient use of fertilisers, and dietary changes could help reduce emissions.

Data for 2017. Source: FAO, 2019
MITIGATION: TARGETS AND AMBITION

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

AMBITION: 2030 TARGETS

Nationally Determined Contribution (NDC): Mitigation

**Targets**

Emissions by 2025 and 2030 will be in a range between 398 and 614 MtCO₂e (incl. land use), as defined in national policy. According to CAT, this equals 415 and 631 MtCO₂e if adjusted to exclude land use.

**Actions**

Actions specified for information purposes.

Climate Action Tracker (CAT) evaluation of NDC and actions

<table>
<thead>
<tr>
<th>Critically Insufficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Insufficient</td>
</tr>
<tr>
<td>Insufficient</td>
</tr>
<tr>
<td>2°C Compatible</td>
</tr>
<tr>
<td>1.5°C Compatible</td>
</tr>
<tr>
<td>Role Model</td>
</tr>
</tbody>
</table>

Implementing its new energy plan (IRP2019), particularly the decommissioning of coal capacity, will enable South Africa to achieve its 2030 NDC target; however, this target is rated “highly insufficient” based on the upper end of the NDC range. In this context, South Africa should consider revising its target downward for 2030 to be resubmitted to the UNFCCC as part of the Paris Agreement’s ambition raising cycle of 2020.

TRANSPARENCY: FACILITATING AMBITION

Countries are expected to communicate their NDCs in a clear and transparent manner in order to ensure accountability and comparability.

The NDC Transparency Check has been developed in response to Paris Agreement decision (1/CP.21) and the Annex to decision 4/CMA.1. While the Annex is only binding from the second NDC onwards, countries are "strongly encouraged" to apply it to updated NDCs, due in 2020.

**NDC Transparency Check recommendations**

To comply with the Paris Agreement by ensuring clarity, transparency and understanding, it is recommended that South Africa provides the following additional information in the upcoming NDC Update (compared to the existing NDC), including:

- Provide comparison with previous targets regarding their coverage
- Provide information on domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner
- Provide specific information on how South Africa plans to account for its NDC

AMBITION: LONG-TERM STRATEGIES

<table>
<thead>
<tr>
<th>Status</th>
<th>Approved in September 2020, it has been submitted to the UNFCCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2050 target</td>
<td>Net-zero emissions by 2050</td>
</tr>
<tr>
<td>Interim steps</td>
<td>Yet to be determined</td>
</tr>
<tr>
<td>Sectoral targets</td>
<td>The proposed legislation (the Climate Change Bill) establishes a process to set &quot;Sectoral Emissions Targets&quot;</td>
</tr>
<tr>
<td>Net-Zero target</td>
<td>Yes</td>
</tr>
<tr>
<td>Net-Zero Year</td>
<td>2050</td>
</tr>
</tbody>
</table>

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.
3. FINANCE

MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS

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

South Africa spent USD 4.3bn on fossil fuel subsidies in 2019, mostly on petroleum as well as coal and electricity. The country was the first African nation to introduce a carbon tax, in 2019.

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

COMPATIBILITY
Source: Rogelj et al., 2018

FISCAL POLICY LEVERS

Fiscal policy levers raise public revenues and direct public resources. Critically, they can shift investment decisions and consumer behaviour towards low-carbon, climate-resilient activities by reflecting externalities in the price.

Fossil Fuel Subsidies by fuel type

In 2019, South Africa’s fossil fuel subsidies totalled USD 4.3bn (compared to USD 2.5bn in 2010 and the last decade peak of USD 4.4bn in 2012). 91% of the subsidies quantified were for consumption of fossil fuels, with the remainder directed to production. USD 1.8bn of the subsidies benefited fossil-fuel-based electricity and USD 1.7bn petroleum. The largest subsidy is represented by the provisional allocation of USD 1.4bn for the restructuring of the state-owned electric utility, Eskom, followed by the value-added tax exemption for gasoline, diesel and kerosene (USD 1.3bn).

Carbon Pricing and Revenue

In June 2019, South Africa became the first African nation to launch a carbon tax. The scheme covers 80% of domestic emissions, including all types of fossil fuels across industry, power, buildings and transport sectors. Emissions are charged at USD 8/tCO₂, although discounts currently bring the effective rate down to USD 0.3-1.2/tCO₂. The carbon tax rate will increase until 2022 by the amount of consumer price inflation plus 2% annually; after 2022, only inflationary adjustments are envisioned. Given the recent tax implementation, estimates for revenues from the scheme are not yet available.

Sources: I4CE, 2019; OECD, 2018.

CORONAVIRUS RECOVERY

In March 2020, the Industrial Development Corporation, with the Department of Trade, Industry and Competition, put together a ZAR 3bn (USD 182.6m) package for funding to support firms, including primary energy suppliers. In April, South Africa announced a USD 26bn stimulus package in response to COVID-19, almost 10% of South Africa’s GDP. As part of the third phase of the package, South Africa has instituted a three-month deferral for filing and payment of carbon tax liabilities.

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

Between 2016 and 2018, South Africa provided an average of USD 151m per year in public finance for the coal sector. This represents an increase in public finance for coal as compared to the previous period 2013-2015, but the overall finance for fossil fuels has more than halved from a total amount of USD 353m per year (mostly provided to oil and gas). The country has no recorded public finance for oil and gas for the period 2016-2018.

Provision of international public support (annual average 2017 and 2018)

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

Bilateral, regional and other channels

Annual average contribution

No data available

Theme of support:

No data available

Multilateral climate finance contributions

No data available

Theme of support:

No data available

Core / General Contributions

Annual average contribution:

No data available

South Africa is not listed in Annex II of the UNFCCC and it is, therefore, not formally obliged to provide climate finance. Despite this, it continues to provide international public finance via the Global Environment Facility (GEF) Trust Fund. While South Africa may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

Source: Oil Change International, 2020

Note: South Africa was able to continue to support coal projects due to the loopholes existing in the ECA’s OECD Coal-Fired Electricity Generation Sector Understanding.
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.

<table>
<thead>
<tr>
<th>Category</th>
<th>Instruments</th>
<th>Objective</th>
<th>Under Discussion/ implementation</th>
<th>None identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Financial Principles</td>
<td>n/a</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced supervisory review, risk</td>
<td>Climate risk disclosure requirements</td>
<td>Disclose the climate-related risks to which financial institutions are exposed</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>disclosure and market discipline</td>
<td>Climate-related risk assessment and climate stress-test</td>
<td>Evaluate the resilience of the financial sector to climate shocks</td>
<td>Voluntary</td>
<td>None identified</td>
</tr>
<tr>
<td>Enhanced capital and liquidity</td>
<td>Liquidity instruments</td>
<td>Mitigate and prevent market illiquidity and maturity mismatch</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>requirements</td>
<td>Lending limits</td>
<td>Limit the concentration of carbon-intensive exposures</td>
<td>Voluntary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Differentiated reserve requirements</td>
<td>Incentivise low carbon-intensive exposures</td>
<td>Voluntary</td>
<td></td>
</tr>
</tbody>
</table>

The Banking Association South Africa (BASA) introduced voluntary “Principles for Managing Environmental and Social Risk” in 2014. Since 2016, BASA has been a member of the Sustainable Banking Network (SBN), while the South African Reserve Bank is a member of the NGFS since April 2019. In 2017, the financial regulatory body of South Africa, the South African Financial Services Board, welcomed and called for the implementation of TCFD recommendations. In the same year, South Africa’s National Treasury convened financial sector regulatory agencies and industry associations to develop a sustainable finance roadmap, engaging private sector actors in TCFD relevant forums. The leading South African Banks are listed in the Johannesburg Stock Exchange (JSE), which introduced rules for its Green Segment into the JSE Debt Listings Requirements that were launched in October 2017. The requirements aim to promote ESG integration and responsible investment by issuers and investors, and the need for the country to finance its energy pathway change.

Nationally Determined Contribution (NDC): Finance

<table>
<thead>
<tr>
<th>Conditionality</th>
<th>Not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment needs</td>
<td>Not mentioned</td>
</tr>
<tr>
<td>Actions</td>
<td>National actions to align financial flows mentioned (fiscal levers)</td>
</tr>
<tr>
<td>International market mechanisms</td>
<td>Not mentioned</td>
</tr>
</tbody>
</table>
For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2020

1 ‘Land use’ emissions is used here to refer to land use, land use change and forestry (LULUCF). The Climate Action Tracker (CAT) derives historical LULUCF emissions from the UNFCCC Common Reporting Format (CRF) reporting tables data converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from land use, land use change and forestry (LULUCF), which under the new IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

2 The 1.5°C ‘fair-share’ ranges for 2030 and 2050 are drawn from the CAT, which compiles a wide range of perspectives on what is considered fair, including considerations such as responsibility, capability, and equality. Countries with a 1.5°C ‘fair-share’ ranges reaching below zero, particularly between 2030 and 2050, are expected to achieve such strong reductions by domestic emissions reductions, supplemented by contributions to global emissions reduction efforts via, for example, international finance. On a global scale, negative emissions technologies are expected to play a role from the 2030s onwards, compensating for remaining positive emissions. The CAT’s evaluation of NDCs shows the resulting temperature outcomes if all other governments were to put forward emissions reduction commitments with the same relative ambition level.

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

4 The Decarbonisation Ratings assess the current year and average of the most recent five years (where available) to take account of the different starting points of different G20 countries.

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

6 This indicator adds up emissions from domestic aviation and international aviation bunkers in the respective country. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.

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

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

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### BIBLIOGRAPHY


