

# SOUTH AFRICA



## CLIMATE TRANSPARENCY REPORT COMPARING G20 CLIMATE ACTION AND RESPONSES TO THE COVID-19 CRISIS

This country profile is part of the **Climate Transparency Report 2020**. Find the full report and other G20 country profiles at: [www.climate-transparency.org](http://www.climate-transparency.org)

### 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.

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

**GHG emissions (incl. land use) per capita (tCO<sub>2</sub>e/capita)<sup>1</sup>**



5-year trend (2012-2017)



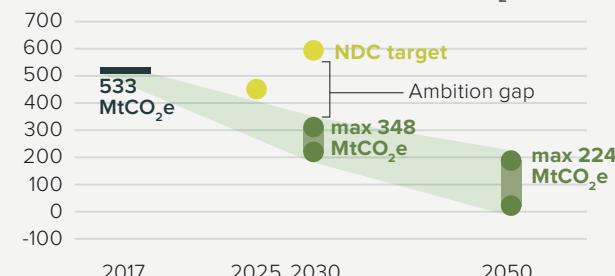
### NOT ON TRACK FOR A 1.5°C WORLD



South Africa needs to reduce its emissions to below 348 MtCO<sub>2</sub>e by 2030 and to below 224 MtCO<sub>2</sub>e 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 MtCO<sub>2</sub>e (adjusted to excl. land use) in 2025 and 2030. All figures are drawn from the Climate Action Tracker and exclude land use emissions.

**South Africa 1.5°C 'fair-share' pathway (MtCO<sub>2</sub>e/year)<sup>1&2</sup>**



Source: Climate Action Tracker, 2019

### 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.

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

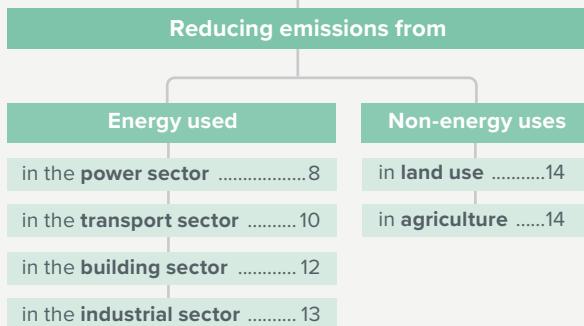
### CORONAVIRUS RECOVERY

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

## CONTENTS

We unpack South Africa's progress and highlight key opportunities to enhance climate action across:



## LEGEND

**Trends** show developments over the past five years for which data are available. The thumbs indicate assessment from a climate protection perspective.



**Decarbonisation Ratings<sup>4</sup>** assess a country's performance compared to other G20 countries. A high score reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.



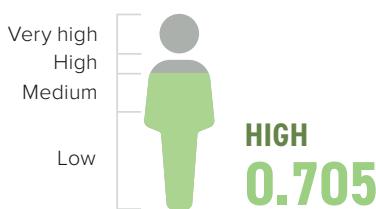
**Policy Ratings<sup>5</sup>** evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.



## SOCIO-ECONOMIC CONTEXT

### Human Development Index

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



Data for 2018. Source: UNDP, 2019

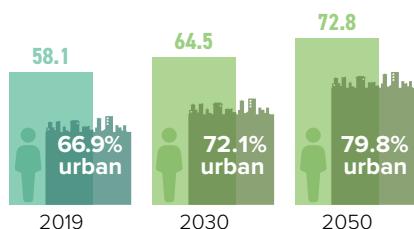
### Gross Domestic Product (GDP) per capita (PPP constant 2015 international \$)



Data for 2019. Source: The World Bank, 2020

### 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.



Sources: The World Bank, 2019; United Nations, 2018

### Death rate attributable to air pollution

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

**0.6** SOUTH AFRICA

**0.1–1.1** G20 RANGE

Data for 2016. Source: WHO, 2018

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: Lenfenna, 2020

# 1. ADAPTATION

## ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE



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



**VULNERABLE TO CLIMATE CHANGE**

South Africa is vulnerable to climate change and **adaptation actions are needed.**



**HIGH COST OF EXTREME WEATHER**

On average, 44 fatalities and almost USD 646m losses occur yearly due to extreme weather events.



**SEVERE IMPACTS ON AGRICULTURE SECTOR**

With global warming, society and its supporting sectors are increasingly exposed to severe impacts such as 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



Source: Based on Germanwatch, 2019

#### Annual average losses (USD mn PPP)



Source: Based on Germanwatch, 2019

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

Impact ranking scale:



		1.5°C	2°C	3°C
<b>WATER</b>	% of area with increase in water scarcity	!	!	!
	% of time in drought conditions	!	!	!
<b>HEAT AND HEALTH</b>	Heatwave frequency	!	!	!
	Days above 35°C	!	!	!
<b>AGRICULTURE</b>	Reduction in crop duration	!	!	!
	Hot spell frequency	!	!	!
	Reduction in rainfall	!	!	!

Source: Water, Heat and Health: own research. Agriculture: Arnell et al., 2019.

Note: These indicators are national scale results, weighted by area and based on global data sets. They are designed to allow comparison between regions and countries and, therefore, entail simplifications. They do not reflect local impacts within the country. Please see technical note for further information.

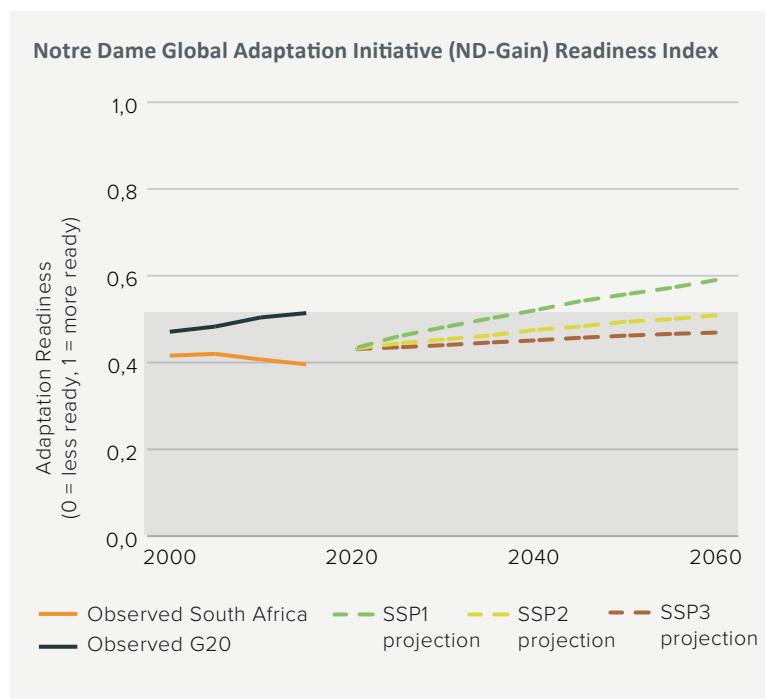
### Coronavirus Recovery

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.*

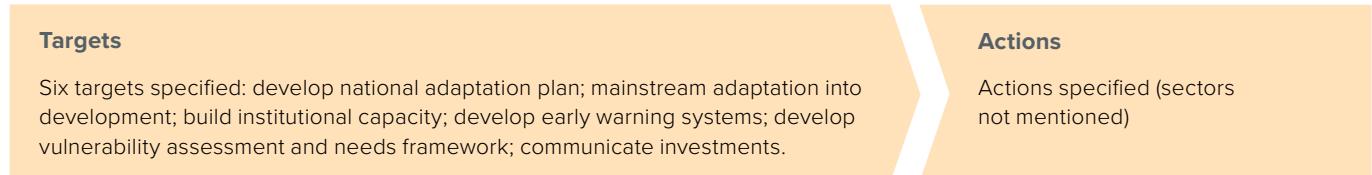
Source: Andrijevic et al., 2020

## ADAPTATION POLICIES

### National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)													M&E process
		Agriculture	Biodiversity	Coastal areas and fishing	Education and research	Energy and industry	Finance and insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism	Water	
National Climate Change Adaptation Strategy	2018	●	●	●	●	●	●	●	●	●	●	●	●	●	Annual reporting and update of strategy every five years

### Nationally Determined Contribution (NDC): Adaptation



## 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**.

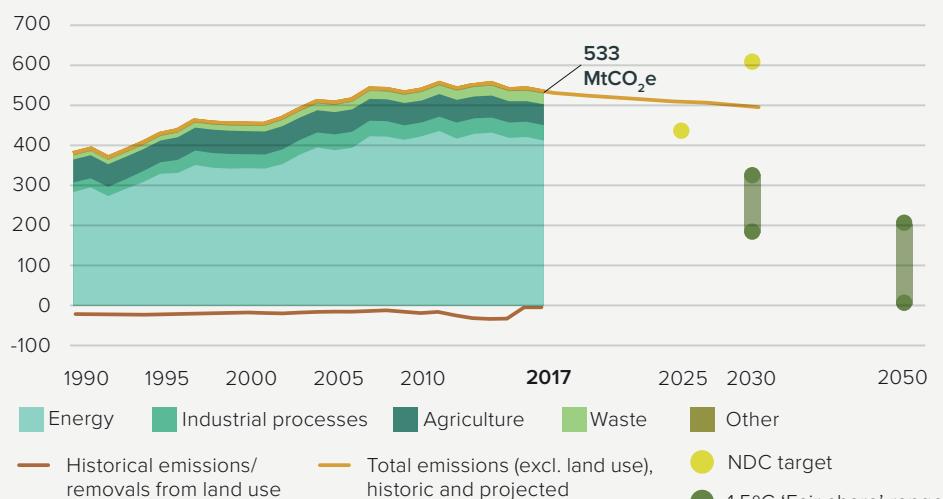


In 2030, global CO<sub>2</sub> emissions need to be **45% below 2010 levels and reach net-zero by 2050**. Global energy-related CO<sub>2</sub> emissions must be cut by 40% below 2010 levels by 2030 and reach net-zero by 2060.

Source: Rogelj et al., 2018

#### GHG emissions across sectors and CAT 1.5°C 'fair-share' range (MtCO<sub>2</sub>e/year)

Total GHG emissions across sectors (MtCO<sub>2</sub>e/year)



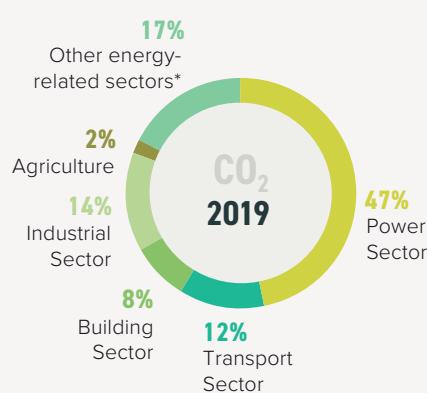
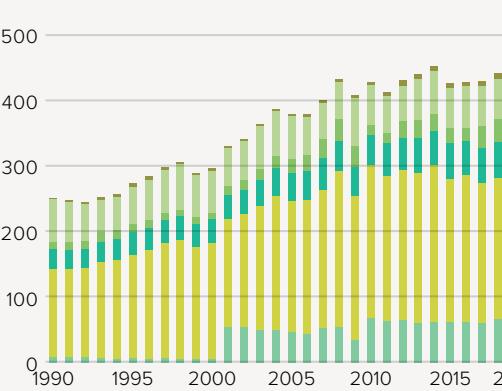
Sources: Gütschow et al., 2019; Climate Action Tracker, 2020

South Africa's emissions (excl. land use) have **increased by 41% between 1990 and 2017**, but have started to plateau in recent years. When considered by category, increases are seen in all sectors over the same timeframe – with the exception of agriculture. The most recent emissions projections show that under current policies, **emissions will decline up to 2030, putting South Africa in the lower end of its NDC target**.

South Africa will need to scale up climate action to become 1.5°C 'fair-share' compatible.

#### Energy-related CO<sub>2</sub> emissions by sector

Annual CO<sub>2</sub> emissions from fuel combustion (MtCO<sub>2</sub>/year)



The largest driver of overall GHG emissions is CO<sub>2</sub> emissions from fuel combustion, which have remained almost stable over the last decade with only minor ups and downs. The electricity and heat sector is the largest contributor with 47%, followed by other energy-related sectors and industries with 17% and 14% respectively.

Note: \*Other energy-related sectors' includes energy consumed by energy industries for the extraction process, heating, pumping, lighting purposes and distribution. In South Africa synthetic fuels production from coal is not included here.

Source: 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.

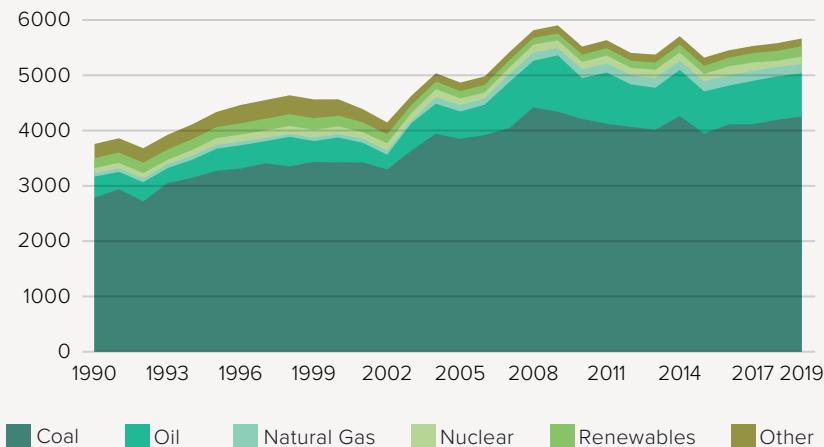


The share of fossil fuels in the globally primary energy mix needs to fall to **67%** by **2030** and to **33%** by **2050** (and to substantially lower levels without Carbon Capture and Storage).

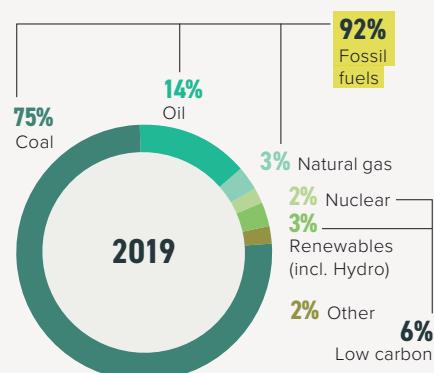
Source: Rogelj et al., 2018

### Energy Mix

Total primary energy supply (PJ)



Coal      Oil      Natural Gas      Nuclear      Renewables      Other



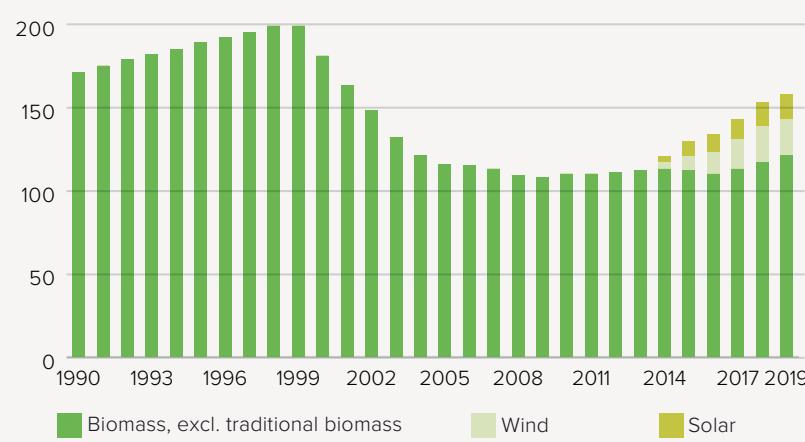
Source: Enerdata, 2020

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.

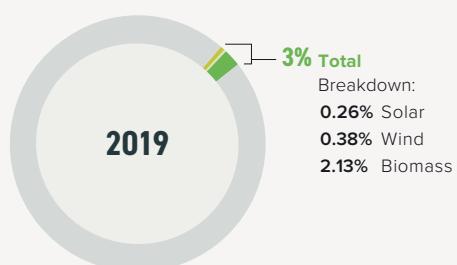
### Solar, Wind, Geothermal, and Biomass Development

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



Biomass, excl. traditional biomass      Wind      Solar

Solar, wind and biomass account for 3% of South Africa's energy supply



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%.

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

5-year trend  
(2014-2019):



Current year  
(2019):

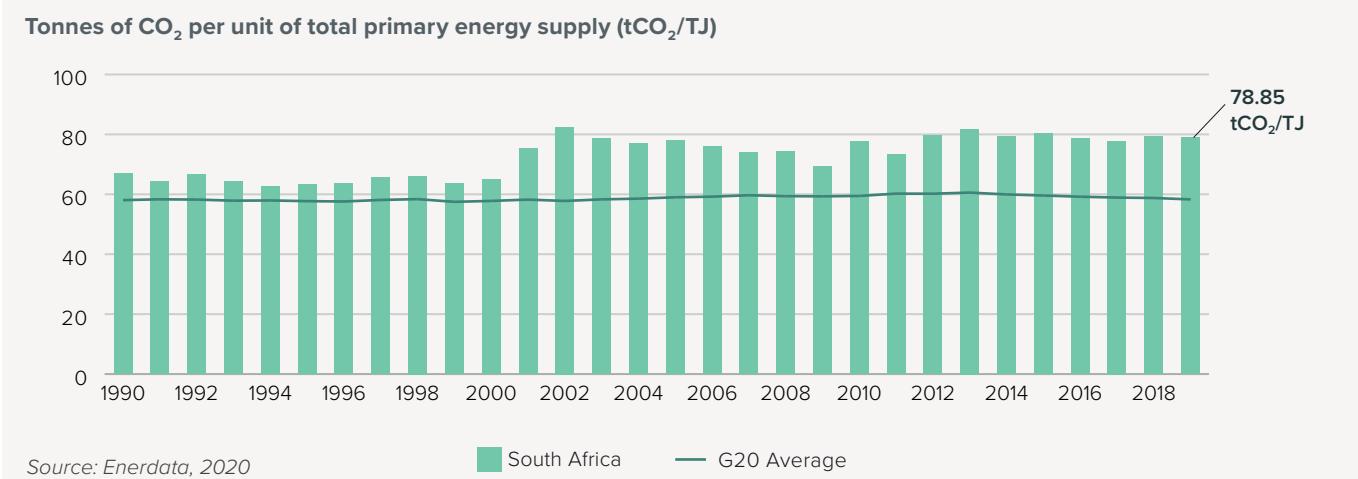


Source: own evaluation

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 29% from 2014 to 2019 in South Africa. Bioenergy (for electricity and heat) makes up the largest share.

Source: Enerdata, 2020

## Carbon Intensity of the Energy Sector



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

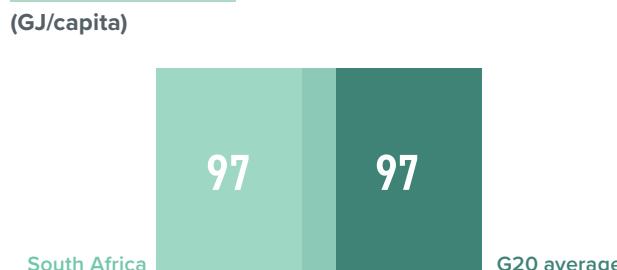


Carbon intensity shows how much CO<sub>2</sub> is emitted per unit of energy supply.

In South Africa, carbon intensity has remained almost constant at around 79 tCO<sub>2</sub>/TJ over the last eight years and is higher than the G20 average. This high level reflects the continuously high share of fossil fuels in the energy mix.

Source: Enerdata, 2020

## Energy supply per capita



Sources: Enerdata, 2020; The World Bank, 2019

### 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.

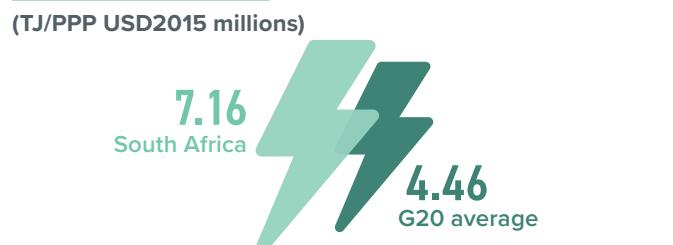
Energy use per capita in South Africa is 97 GJ/capita, equal to the G20 average, and is decreasing (-5.2%, 2014-2019) in contrast to the increasing G20 average (+2%).

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



Source: own evaluation

## Energy intensity of the economy



Data for 2018. Sources: Enerdata, 2020; UN Department of Economic and Social Affairs Population Division, 2020; The World Bank, 2020

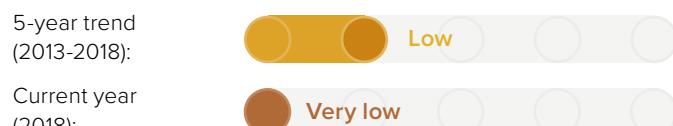
### Energy intensity of the economy: 5-year trend (2013-2018)



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



Source: own evaluation



## POWER SECTOR

Emissions from energy used to make electricity and heat

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.



**47%** Share in energy-related CO<sub>2</sub> emissions from electricity and heat production.



### Coal and decarbonisation

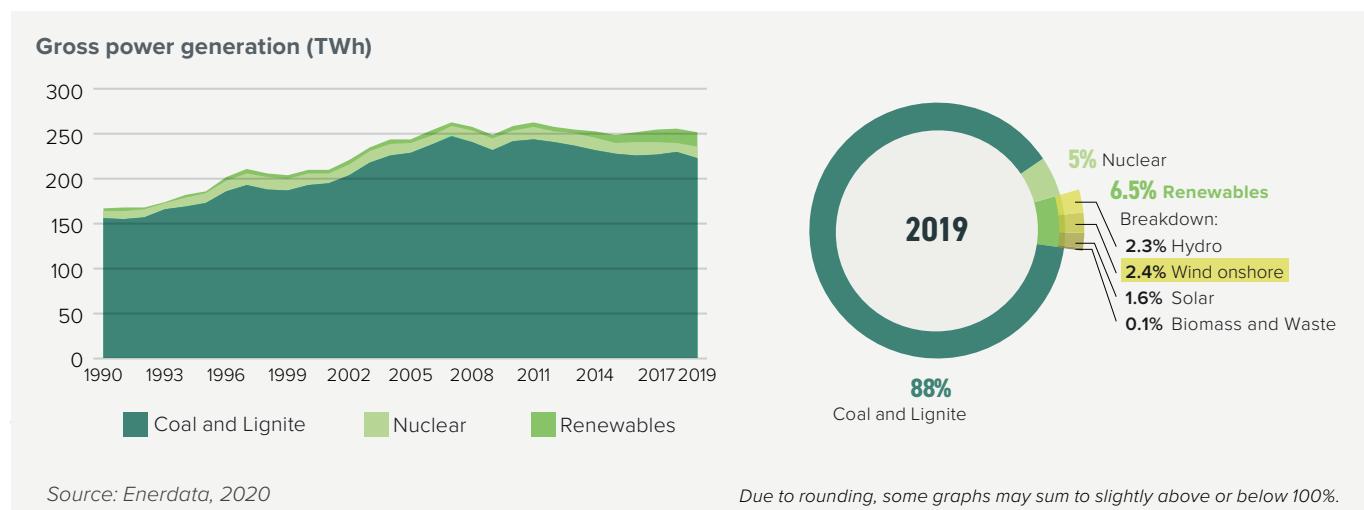
Worldwide, coal use for power generation needs to peak by 2020, and between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. Electricity generation has to be decarbonised before 2050, with renewable energy the most promising alternative.

Source: Enerdata, 2020

Sources: Rogelj et al., 2018; Climate Analytics, 2016; Climate Analytics, 2019

## STATUS OF DECARBONISATION

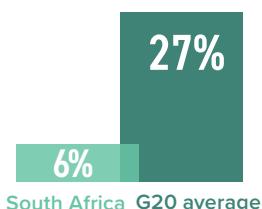
### Electricity mix



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)



Source: Enerdata, 2020

### Decarbonisation rating: share of renewables compared to other G20 countries

5-year trend  
(2014-2019):



Current year  
(2019):



Source: own evaluation

### Share of renewables in power generation: 5-year trend (2014-2019)



## Emissions intensity of the power sector

Country vs G20 average (gCO<sub>2</sub>/kWh)



Source: Enerdata 2020

### Emissions intensity: 5-year trend (2014-2019)



For each kilowatt hour of electricity produced, 879 gCO<sub>2</sub> 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): Medium

Current year (2019): Very low

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

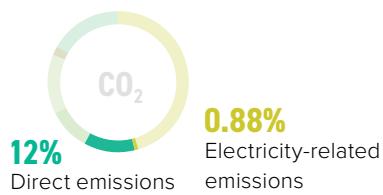


## TRANSPORT SECTOR

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 CO<sub>2</sub> emissions from transport sector**



Source: Enerdata, 2020



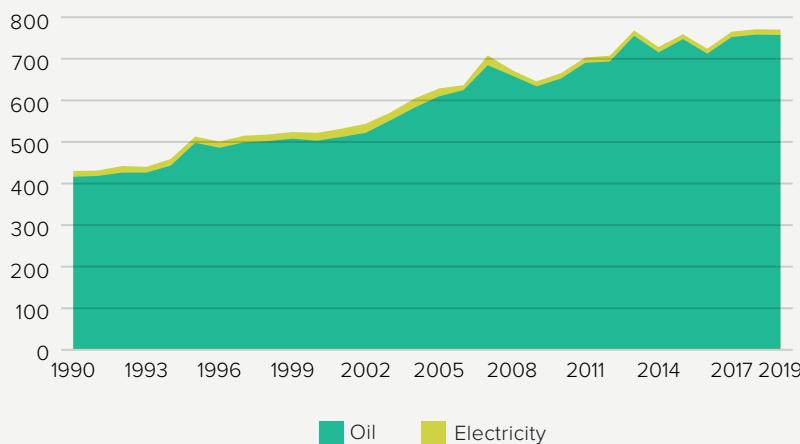
The share of low-carbon fuels in the transport fuel mix must increase to about 60% by 2050.

Source: Rogelj et al., 2018

## STATUS OF DECARBONISATION

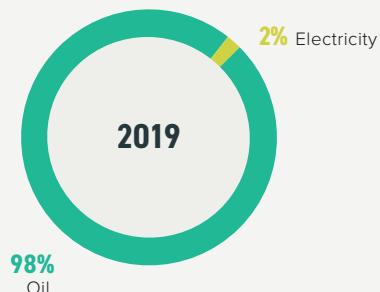
### Transport energy mix

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



Source: Enerdata, 2020

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



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 (tCO<sub>2</sub>/capita)



Data for 2018. Source: Enerdata, 2020

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

5-year trend (2013-2018):

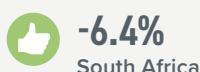


Current year (2018):



Source: own evaluation

### Transport emissions: 5-year trend (2013-2018)



## Aviation emissions per capita<sup>6</sup>

(tCO<sub>2</sub>/capita)

Data for 2017. Source: Enerdata, 2020

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

5-year trend (2012-2017):



Current year (2017):



Source: own evaluation

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



## Motorisation rate

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

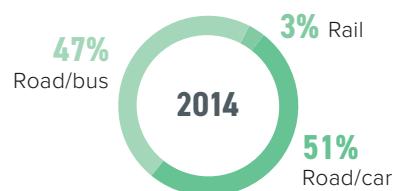
45% of the kilometres travelled is by car, but only 0.04% of new car sales are electric vehicles in South Africa.  
Source: Vieweg et al., 2018

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



Data for 2018. Source: IEA, 2019

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



Data for 2014. Source: Vieweg et al., 2018

## Freight transport

(modal split in % of tonne-km)



Data for 2014. 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 CO<sub>2</sub> 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



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) (tCO<sub>2</sub>/capita)



Source: Enerdata, 2020

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).

### Building emissions: 5-year trend (2014-2019)



### Decarbonisation rating: building emissions compared to other G20 countries

5-year trend (2014-2019):



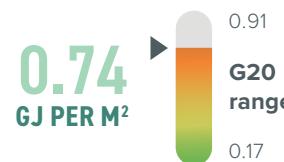
Current year (2019):



Source: own evaluation

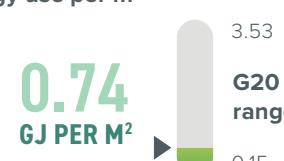
### Residential buildings

Energy use per m<sup>2</sup>



### Commercial and public buildings

Energy use per m<sup>2</sup>



Building emissions are largely driven by how much energy is used in heating, cooling, lighting, household appliances, etc.

Different data year for each country

Source: Castro-Alvarez et al., 2018

## POLICY ASSESSMENT

### Near zero energy new buildings



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



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



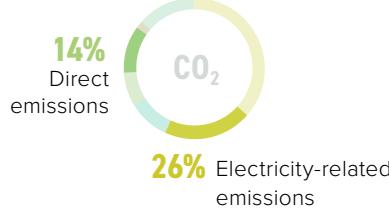
## INDUSTRY SECTOR

Emissions from energy in the industrial sector

**Industry-related emissions make up 14% of direct CO<sub>2</sub> emissions in South Africa** and have remained relatively constant over the last two decades in absolute terms.

**Share in energy-related CO<sub>2</sub> emissions from industrial sector**

Source: Enerdata, 2020



COMPATIBILITY

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

Source: Rogelj et al., 2018

## STATUS OF DECARBONISATION

### Industry emissions intensity<sup>7</sup>

(tCO<sub>2</sub>e/USD2015 GVA)



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

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

+1%  
South Africa

-12%  
G20 average

### Decarbonisation rating: emissions intensity of industry compared to other G20 countries

5-year trend  
(2011-2016):



Current year  
(2016):



Source: own evaluation

### Carbon intensity of cement production<sup>8</sup>

(kgCO<sub>2</sub>/tonne product)



South Africa World average

South Africa's cement industry is slightly more emissions-intensive than the world average.

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

### Carbon intensity of steel production<sup>8</sup>

(kgCO<sub>2</sub>/tonne product)



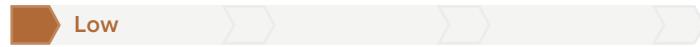
South Africa World average

Steel production and steelmaking are significant GHG emissions sources, and challenging to decarbonise. South Africa's steel industry is more emissions-intensive than the world average.

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

## POLICY ASSESSMENT

### Energy Efficiency



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.**

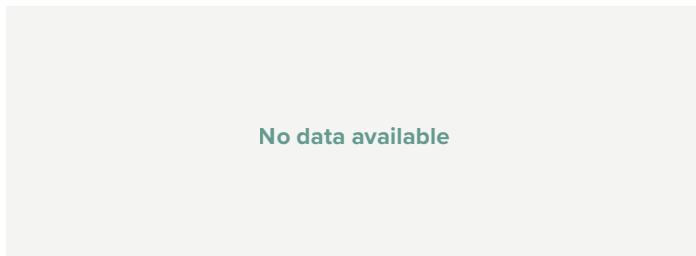


**COMPATIBILITY**

**Global deforestation needs to be halted** and changed to net CO<sub>2</sub> removals by around 2030.

Source: Rogelj et al., 2018

### Global tree-cover loss



## 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



**DIETARY SHIFTS ARE NEEDED**

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.

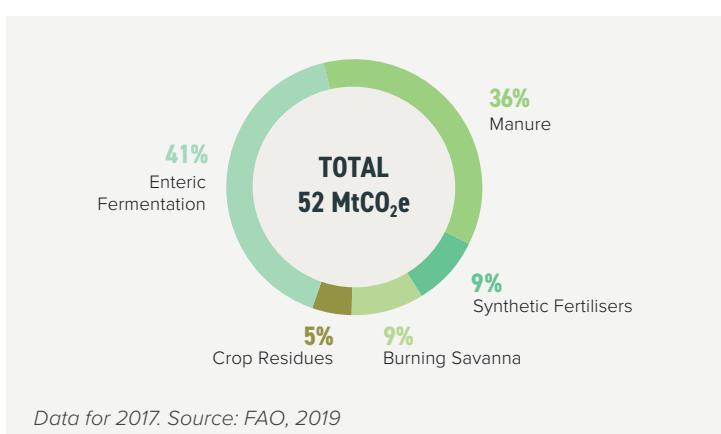


**COMPATIBILITY**

**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.

## 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 MtCO<sub>2</sub>e (incl. land use), as defined in national policy. According to CAT, this equals 415 and 631 MtCO<sub>2</sub>e if adjusted to exclude land use.

#### Actions

Actions specified for information purposes.

### Climate Action Tracker (CAT) evaluation of NDC and actions

Critically Insufficient

● Highly Insufficient

Insufficient

2°C Compatible

1.5°C Compatible

Role Model

NDCs with this rating fall outside of a country's 'fair-share' range and are not at all consistent with holding warming to below 2°C let alone with the Paris Agreement's stronger 1.5°C limit. If all government NDCs were in this range, warming would reach between 3°C and 4°C.

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.

*Evaluation as at October 2020, based on country's NDC. Source: Climate Action Tracker*

## 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

For more visit [www.climate-transparency.org/ndc-transparency-check](http://www.climate-transparency.org/ndc-transparency-check)

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

Status	Approved in September 2020, it has been submitted to the UNFCCC
2050 target	Net-zero emissions by 2050
Interim steps	Yet to be determined
Sectoral targets	The proposed legislation (the Climate Change Bill) establishes a process to set "Sectoral Emissions Targets"
Net-Zero target	Yes
Net-Zero Year	2050

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.



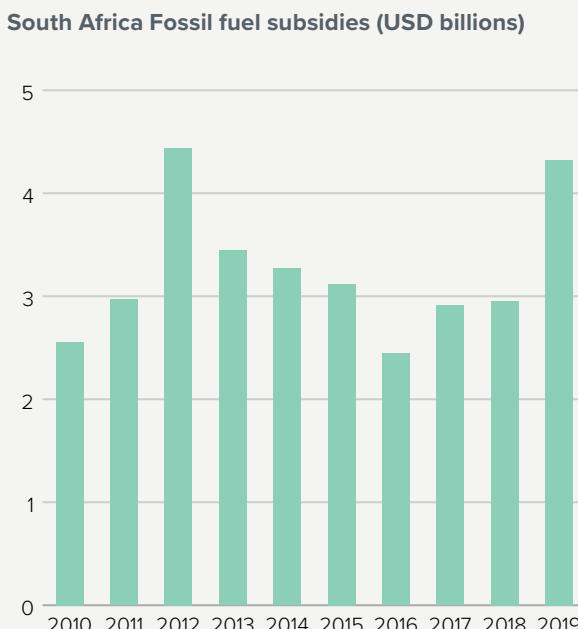
Investment in green energy and infrastructure needs to outweigh fossil fuels investments by 2025.

Source: Rogelj et al., 2018

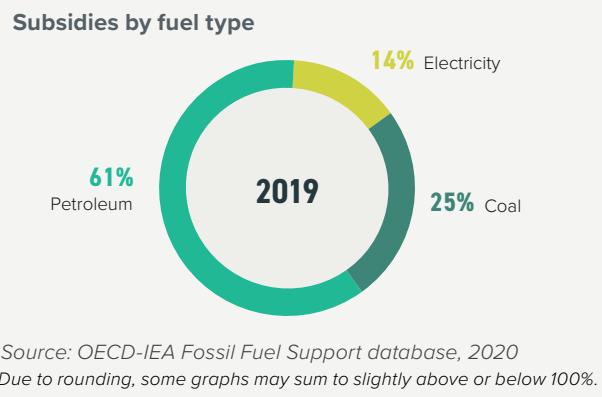
## FISCAL POLICY LEVERS

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



### 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

#### No data available

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/tCO<sub>2</sub> although discounts currently bring the effective rate down to USD 0.3-1.2/tCO<sub>2</sub>. 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

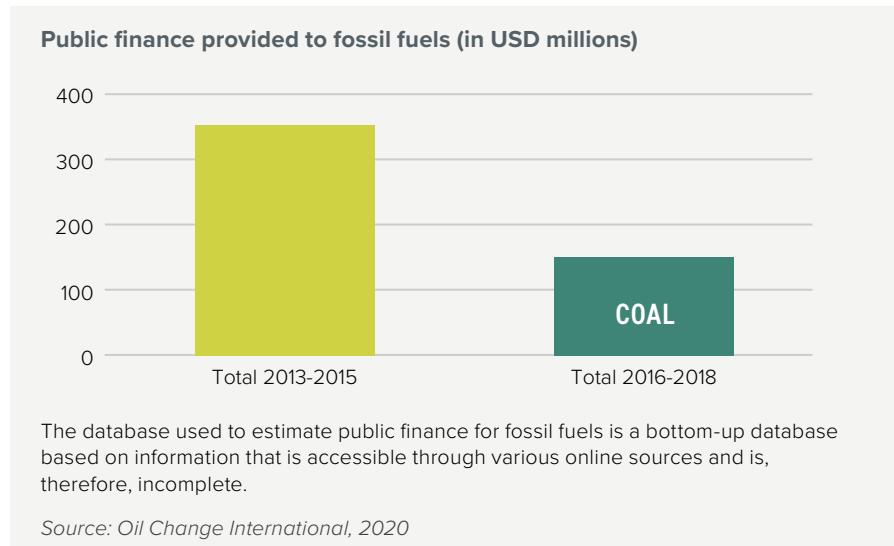
In March 2020, the Industrial Development Corporation, with the Department of Trade, Industry and Competition, put together a ZAR 3bn (USD 182.6m) package for funding to support firms, including primary energy suppliers. In April, South Africa announced a USD 26bn stimulus package in response to COVID-19, 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.

References: Mboweni, 2020; Patel, 2020.

## PUBLIC FINANCE

**Governments steer investments through their public finance institutions**, including via development banks both at home and overseas, and green investment banks. Developed G20 countries also have an obligation to provide finance to developing countries, and public sources are a key aspect of these obligations under the UNFCCC.

### Public finance for fossil fuels



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.

*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.*

### 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.

# FINANCIAL POLICY AND REGULATION

## Financial policy and regulation

Through policy and regulation governments can **overcome challenges to mobilising green finance**, including: real and perceived risks, insufficient returns on investment, capacity and information gaps.

Category	Instruments	Objective	Under Discussion/implementation	None identified		
			Mandatory	Voluntary	Under Discussion/implementation	None 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.				
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				
Enhanced capital and liquidity requirements	Liquidity instruments	Mitigate and prevent market illiquidity and maturity mismatch				
	Lending limits	Limit the concentration of carbon-intensive exposures				
		Incentivise low carbon-intensive exposures				
	Differentiated reserve requirements	Limit misaligned incentives and channel credit to green sectors				

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

Conditionality	Not specified
Investment needs	Not mentioned
Actions	National actions to align financial flows mentioned (fiscal levers)
International market mechanisms	Not mentioned

## ENDNOTES

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](http://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 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).

On endnote 5.	Low	Medium	High	Frontrunner
<b>Renewable energy in power sector</b>	No policy to increase the share of renewables	Some policies	Policies and longer-term strategy/ target to significantly increase the share of renewables	Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place
<b>Coal phase-out in power sector</b>	No target or policy in place for reducing coal	Some policies	Policies + coal phase-out decided	Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)
<b>Phase out fossil fuel cars</b>	No policy for reducing emissions from light-duty vehicles	Some policies (e.g. energy/emissions performance standards or bonus/malus support)	Policies + national target to phase out fossil fuel light-duty vehicles	Policies + ban on new fossil-based light-duty vehicles by 2035 worldwide
<b>Phase out fossil fuel heavy-duty vehicles</b>	No policy	Some policies (e.g. energy/emissions performance standards or support)	Policies + strategy to reduce absolute emissions from freight transport	Policies + innovation strategy to phase out emissions from freight transport by 2050
<b>Modal shift in (ground) transport</b>	No policies	Some policies (e.g. support programmes to shift to rail or non-motorised transport)	Policies + longer-term strategy	Policies + longer-term strategy consistent with 1.5°C pathway
<b>Near zero energy new buildings</b>	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + national strategy for near zero energy new buildings	Policies + national strategy for all new buildings to be near zero energy by 2020 (OECD countries) or 2025 (non-OECD countries)
<b>Energy efficiency in Industry</b>	0-49% average score on the policy-related metrics in the ACEEE’s International Energy Efficiency Scorecard	50-79% average score on the policy-related metrics in the ACEEE’s International Energy Efficiency Scorecard	80-89% average score on the policy-related metrics in the ACEEE’s International Energy Efficiency Scorecard	Over 90% average score on the policy-related metrics in the ACEEE’s International Energy Efficiency Scorecard
<b>Retrofitting existing buildings</b>	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + retrofitting strategy	Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020
<b>Net-zero deforestation</b>	No policy or incentive to reduce deforestation in place	Some policies (e.g. incentives to reduce deforestation or support schemes for afforestation / reforestation in place)	Policies + national target for reaching net-zero deforestation	Policies + national target for reaching zero deforestation by 2020s or for increasing forest coverage

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