South Africa

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

South Africa’s GHG emissions are increasing and 2030 projections show they are expected to grow further. Emissions from land use, land-use change and forestry (LULUCF) play a small role in South Africa’s emissions profile. Emissions from energy-related CO2 grew in line with GHG emissions, accounting for around two-thirds of it. After peaking at 8.6 tCO2 in 2008, energy-related per capita emissions decreased to just below 8 tCO2, far above the G20 average. The CCPI ranks South Africa’s emissions level as relatively poor, with the trend developing in a positive direction.

**GREENHOUSE GAS (GHG) EMISSIONS**

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**Composition of GHG emissions**

- CO2: 81%
- N2O: 4%
- CH4: 13%
- F-Gases: 1%
- CO2 emissions from forestry: -4%


Sources: Past energy related emissions from the Climate Change Performance Index (CCPI); past non-energy and future emissions projections from the Climate Action Tracker (CAT). CCPI calculations are primary based on the most recent IEA data; CAT calculations are based on national policies and country communications.
While the energy intensity of South Africa’s economy (TPES/GDP) is declining, it far exceeds the G20 average. The CCPI ranks South Africa as a very poor performer. Since energy intensity of the economy was declining in the last five years, the CCPI rates the trend as positive.

Since 2001, the carbon intensity of South Africa’s energy sector (CO2/TPES) has remained at a level of around 70 tCO2 per TJ, above the G20 average. A slow decrease is expected in the future, but not enough though to stay below the minimal value required for a 2°C-compatible pathway. The CCPI evaluates South Africa’s level of carbon intensity in the energy sector as very poor, with no clear trend.

South Africa has a high share of coal in its primary energy supply, which has slightly decrease over time. Starting from about 73%, the share dropped to 69% throughout the last two decades. Future projection indicate a further decrease to 63% by 2030, which remains more than twice the value needed to be in line with a 2°C compatible pathway.
Electricity demand per capita

South Africa's electricity demand per capita has been slowly increasing over the last years, up to nearly 4000 kWh per capita in 2012, which is relatively high compared to other G20 countries. Further increases are expected by 2030.

Emissions intensity of the electricity sector

Given South Africa's high share of coal in its energy mix, the emissions intensity of electricity production is higher than in other G20 countries. Emissions per kWh are more than three times higher than in Denmark, a good practice benchmark country with no large hydropower potential or nuclear power. Future projections indicate a slight decrease.

In South Africa's primary energy supply, the share of renewable energy remained close to the G20 average until 2013, although with a shaped decrease between 2002 and 2008. The CCPI ranks South Africa's renewable energy in TPES performance as poor but recognises a positive trend in the last years. South Africa's share of renewable energy in electricity is at a level of only 1%, although according to national policies it is expected to increase up to 12% in the future.

Renewable energy in TPES and electricity sector

Source: CCPI and CAT

Electricity demand per capita

Average electricity demand per capita in G20

Electricity demand per capita (past trend)

Electricity demand per capita (current policy projections)

Emissions intensity of electricity

Source: CAT, 2015

Evaluation of the electricity emission intensity

Good practice benchmark: with large hydropotential (Norway)

Good practice benchmark: without nuclear or large hydropotential (Denmark)
South Africa submitted its INDC on 25 September 2015. The INDC includes a target of limiting annual greenhouse gas (GHG) emissions to 398 - 614 MtCO₂e (including Land Use, Land Use Change and Forestry, or LULUCF), over the period 2025–2030. Based on this target, the CAT rates South Africa “inadequate”, meaning that if all governments showed such low ambition, warming would likely exceed 3–4°C.

So far, currently implemented policies have had little effect on the emissions trend compared to a business as usual (BAU) scenario. Future projections estimate around 729 MtCO₂e in 2020, excluding LULUCF, equivalent to a 110% increase in emissions above 1990 levels (also excluding LULUCF).

For 2030, projections suggest a further increase in emissions up to 943 MtCO₂e, excluding LULUCF, representing a 172% increase in emissions compared with 1990 levels (also excluding LULUCF).

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

South Africa’s international climate policy performance has deteriorated. On a national level its performance is relatively poor. Experts note that national climate policies are contradicted by mining and economic development legislation. Regional and local policies tackling mitigation and adaptation can be more relevant than national policies. The CCPI rates South Africa as medium.

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FINANCING THE TRANSITION

Climate Transparency rates South Africa’s investment attractiveness low to medium, due to limited support schemes to back its ambitious renewables target. Further, lack of agreement on the decarbonisation approach and a strong fossil fuel lobby creates friction, preventing political progress.

**Investment attractiveness**

<table>
<thead>
<tr>
<th>Category (own assessment)</th>
<th>Trend**</th>
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<tbody>
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<td>RECAI* (E&amp;Y index)</td>
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*Adapted from RECAI and re-classified in 3 categories (low, medium, high) for comparison purposes with Allianz Monitor.

**Taken from RECAI issue of May 2016

**Historical investments in renewable energy and investment gap**

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

<table>
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<tr>
<th>Investments in the power sector</th>
<th>Investments in renewable energy for the power sector</th>
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<tbody>
<tr>
<td><strong>% of current investments in the power sector compared to the investment needs under a 2°C pathway</strong></td>
<td><strong>% of current investments for renewable energy in the power sector compared to the investment needs under a 2°C pathway</strong></td>
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<tr>
<td>27%</td>
<td>9%</td>
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Source: Adapted from WEIO, 2014†

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

**Carbon pricing mechanisms**

**Emissions Trading Schemes (ETS)**

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

**Carbon Tax**

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

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

South Africa provides a number of direct budgetary transfers that support fossil fuel production. The government supports exploration of offshore oil fields and onshore shale deposits, and provides a budgetary allocation to the South African National Energy Development Institute for R&D for carbon capture and hydraulic fracturing. The wholly state-owned oil and gas company, PetroSA, accounts for all oil and gas production and a majority of exploration activity. In addition, the government provides coal, oil and gas companies with tax expenditures for exploration and extraction in the form of accelerated depreciation.

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

Public climate finance

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