Climate Transparency

CLIMATE ACTION TRACKER

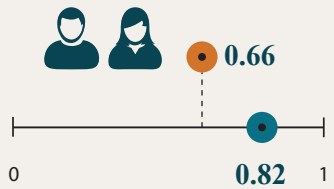
CLIMATE CHANGE PERFORMANCE index 2016

BROWN TO GREEN: G20 TRANSITION TO A LOW CARBON ECONOMY

South Africa

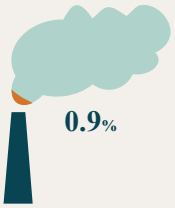
This country profile assesses the South Africa's past, present and indications of future performance towards a low-carbon economy by evaluating emissions, decarbonisation, climate policy performance and climate finance. The profile summarises the respective findings from, amongst others, the Climate 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).

Human Development Index



Source: UNDP, data for 2015

Share of global GHG emissions

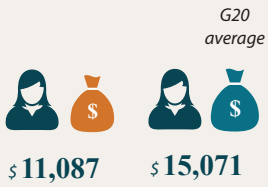


GHG emissions per capita (tCO_2e/cap)

Source: World Bank Indicators, data for 2012

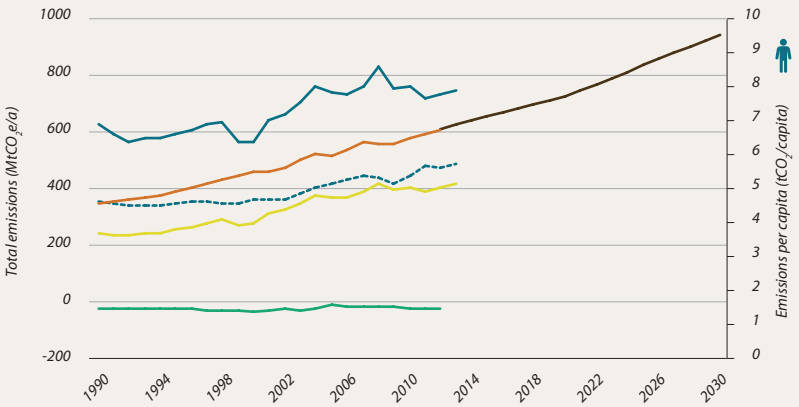
Share of global GDP

GDP per capita



Source: IEA, data for 2013

GREENHOUSE GAS (GHG) EMISSIONS



Historic emissions (excluding forestry)

Energy-related CO_2 emissions

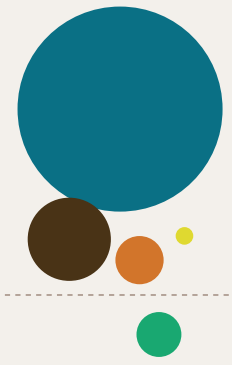
Energy-related CO_2 emissions per capita

Current policy emissions projections (excluding forestry)

Historic forestry emissions/removals

G20 average of energy-related CO_2 emissions per capita

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 $C0_2$ grew in line with GHG emissions, accounting for around two-thirds of it. After peaking at 8.6 tCO_2 in 2008, energy-related per capita emissions decreased to just below 8 tCO_2, far above the G20 average. The CCPI ranks South Africa's emissions level as relatively poor, with the trend developing in a positive direction.



Composition of GHG emissions

CO_2* 81%

N_2O 4%

CH_4 13%

F-Gases 1%

CO_2 emissions from forestry -4%

*CO_2 emissions incl. LULUCF
Source: Annex I countries: UNFCCC (2015); Non-Annex I countries: IEA (2014) and CAT (2015)

CCPI evaluation of emissions level and trend

Level

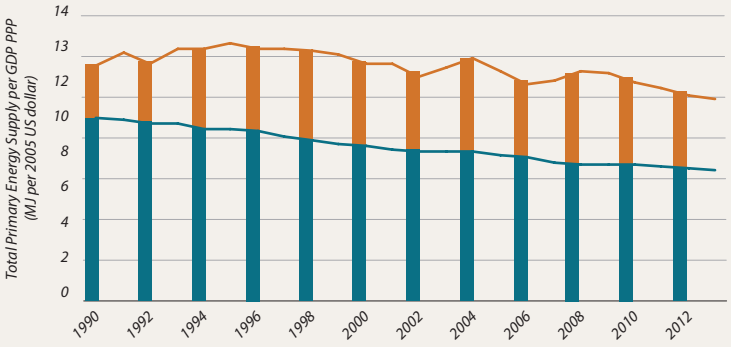
Weak trend

Strong trend

Sources: Past energy related emissions from the Climate Change Performance Index (CCPI); past non-energy and future emissions projections from the Climate Action Tracker (CAT). CCPI calculations are primary based on the most recent IEA data; CAT calculations are based on national policies and country communications.

DECARBONISATION

Energy intensity of the economy



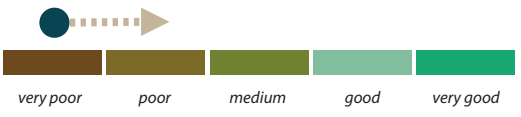
While the energy intensity of South Africa's economy (TPES/GDP) is declining, it far exceeds the G20 average. The CCPI ranks South Africa as a very poor performer. Since energy intensity of the economy was declining in the last five years, the CCPI rates the trend as positive.

Energy intensity

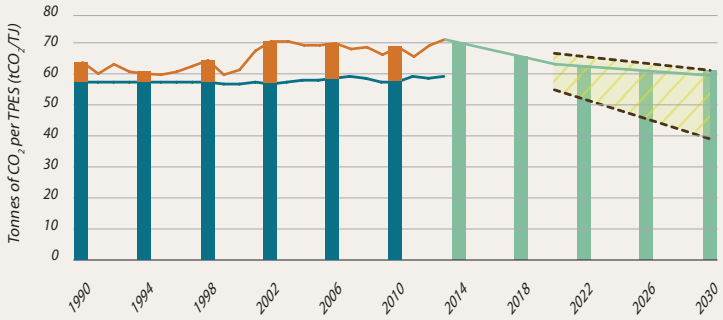
Average energy intensity in G20

Source: CCPI, 2016

CCPI evaluation of energy intensity of GDP



Carbon intensity of the energy sector



Since 2001, the carbon intensity of South Africa's energy sector (CO_2/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.

Carbon intensity (past trend)

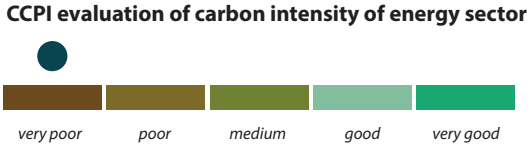
Average carbon intensity in G20

Carbon intensity (current policy projection)

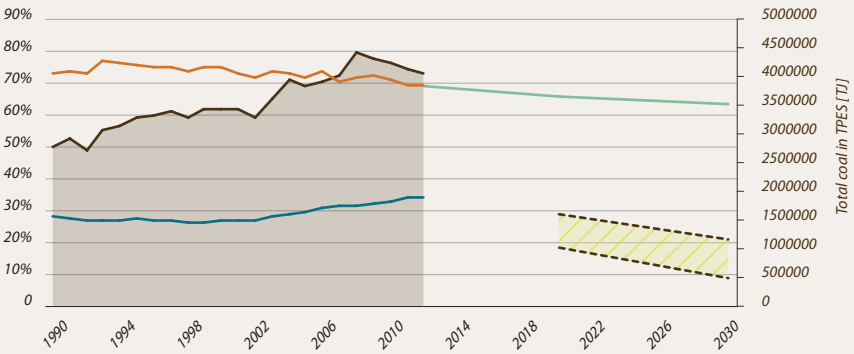
Global benchmark for a 2°C pathway

Sources: Past: CCPI; future projections: CAT

CCPI evaluation of carbon intensity of energy sector



Share of coal in Total Primary Energy Supply (TPES)



% of coal (past trend)

Average % of coal in G20

% of coal (current policy projections)

Global benchmark for a 2°C pathway (min & max)

Total coal consumption (TJ)

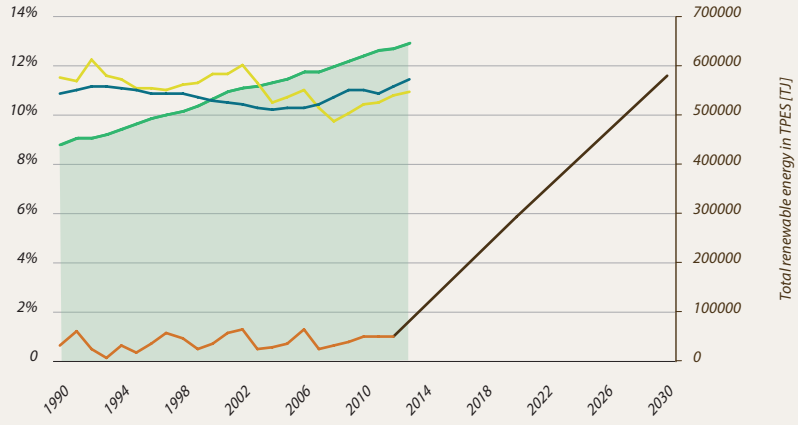
Source: CAT

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.

Evaluation of coal share in TPES

Source: own evaluation

Renewable energy in TPES and electricity sector



% of renewable energy in electricity (past trend)

% of renewable energy in TPES (past trend)

% of renewable energy in electricity (current policy projections)

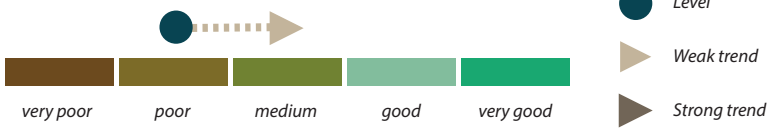
G20 average % of renewable energy in TPES

Total renewable energy consumption (TJ)

Sources: CCPI and CAT

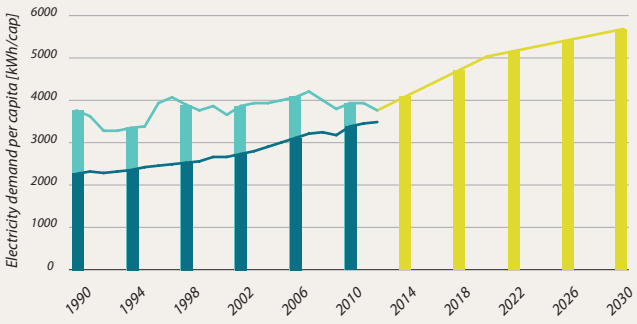
In South Africa's primary energy supply, the share of renewable energy remained close to the G20 average until 2013, although with a sharped decrease between 2002 and 2008. The CCPI ranks South Africa's renewable energy in TPES performance as poor but recognises a positive trend in the last years. South 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.

CCPI evaluation of renewable share in TPES



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.



Electricity demand per capita (past trend)

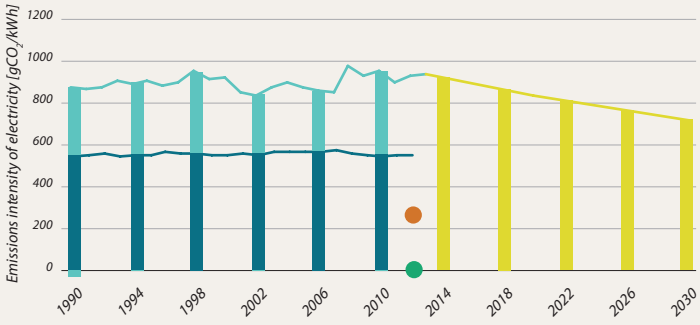
Electricity demand per capita (current policy projections)

Average electricity demand per capita in G20

Source: CAT, 2015

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.



Emissions intensity (past trend)

Average emissions intensity in G20

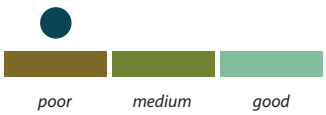
Emissions intensity (current policy projections)

Good practice benchmark: without nuclear or large hydro potential (Denmark)

Good practice benchmark: with large hydro potential (Norway)

Source: CAT, 2015

Evaluation of the electricity emission intensity



Source: own evaluation

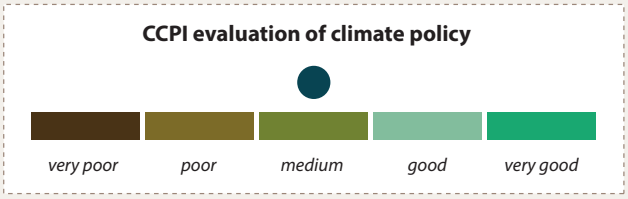
CLIMATE POLICY PERFORMANCE

Checklist of the climate policy framework

*Low emissions development plan for 2050**	✓
2050 GHG emissions target	✓
Building codes, standards and incentives for low-emissions options	✓
Support scheme for renewables in the power sector	✓
Emissions performance standards for cars	✗
Emissions Trading Scheme (ETS)	✗
Carbon tax	✗

** understood as decarbonisation plans and not specifically as the plans called for in the Paris Agreement*

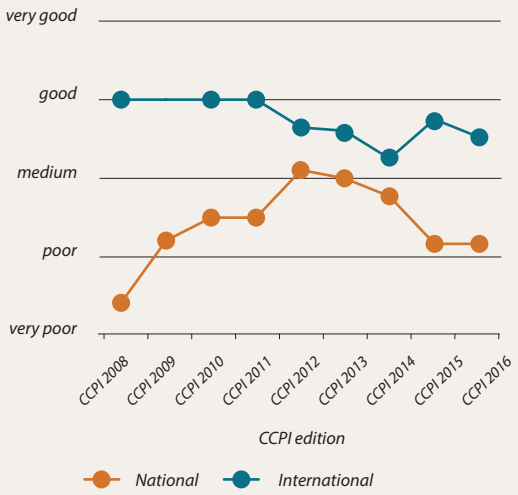
Source: Climate Policy Database, 2016



Climate policy evaluation by experts

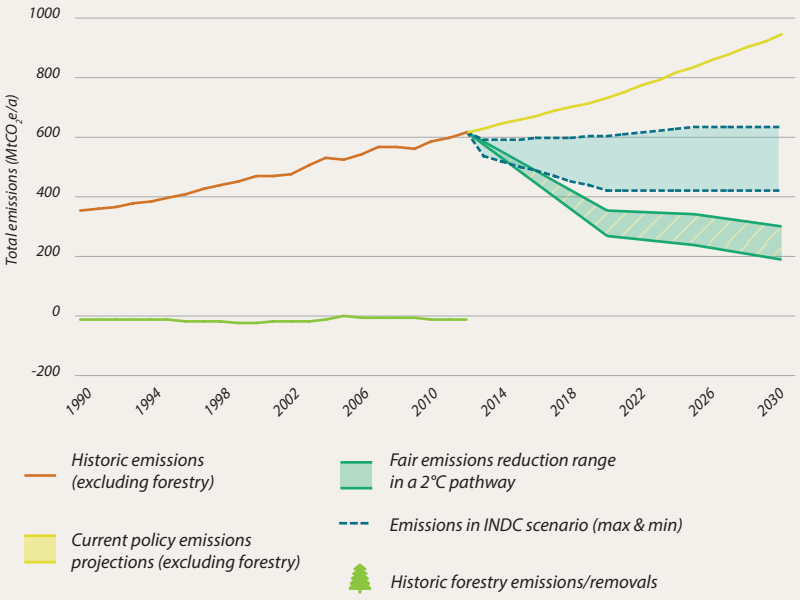
South Africa's international climate policy performance has deteriorated. On a national level its performance is relatively poor. Experts note that national climate policies are contradicted by mining and economic development legislation. Regional and local policies tackling mitigation and adaptation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

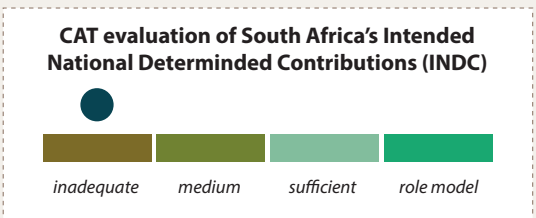
The CCPI evaluates a country's performance in national and international climate policy through feedback from national energy and climate experts.



Source: CCPI, 2016

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





Source: CAT, 2015

South Africa submitted its INDC on 25 September 2015. The INDC includes a target of limiting annual greenhouse gas (GHG) emissions to 398 - 614 $MtCO_2e$ (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 $MtCO_2e$ 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 $MtCO_2e$, excluding LULUCF, representing a 172% ncrease in emissions compared with 1990 levels (also excluding LULUCF).

FINANCING THE TRANSITION

Investment attractiveness

Allianz Energy and Climate Monitor	LOW
RECAI (E&Y index) Category (own assessment)*	MEDIUM
*Trend***	↑

**Adapted from RECAI and re-classified in 3 categories (low, medium, high) for comparison purposes with Allianz Monitor.*

***Taken from RECAI issue of May 2016*

Climate Transparency rates 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.

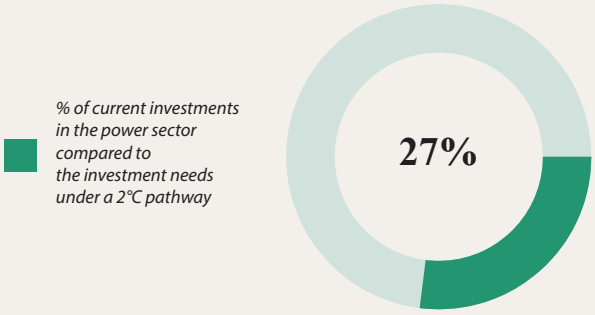
Sources: Allianz Energy and Climate Monitor and RECAI reports

The Allianz Energy & Climate Monitor ranks G20 member states on their relative fitness as potential investment destinations for building low-carbon electricity infrastructure. The investment attractiveness of a country is assessed through four categories: Policy adequacy, Policy reliability of sustained support, Market absorption capacity and the National investment conditions. The Renewable Energy Country Attractiveness Index (RECAI) produces score and rankings for countries' attractiveness based on Macro drivers, Energy market drivers and Technology-specific drivers which together compress a set of 5 drivers, 16 parameters and over 50 datasets.

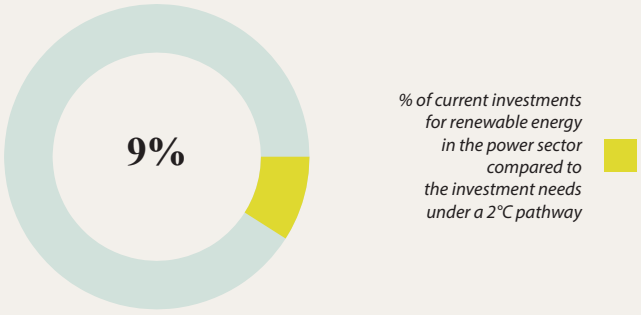
Historical investments in renewable energy and investment gap

This section shows 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.

Investments in the power sector



Investments in renewable energy for the power sector



Source: Adapted from WEIO, 2014[1]

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

Carbon pricing mechanisms

Emissions Trading Schemes (ETS)

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

Carbon Tax

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

In November 2015, South Africa published a draft Carbon Tax Bill, which announced the beginning of 2016 as starting date for the implementation of its carbon tax. Once it has entered into force, the tax will cover 80% of South Africa's emissions. However, following a public consultation process, South Africa is currently revising the bill.

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.

Average annual national subsidies (2013-14)*

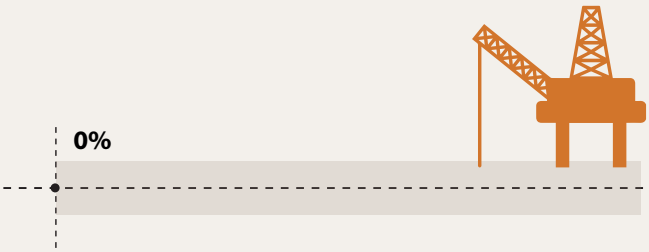
South Africa

G20 total

$0 *billion*

$70 *billion*

% of government's income from oil and gas production (2013)*



Source: ODI, 2015

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

Public climate finance

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.