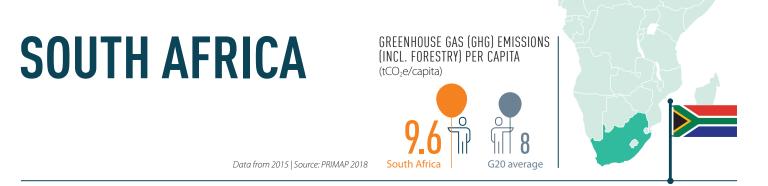


BROWN TO GREEN:

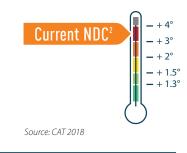
THE G20 TRANSITION TO A LOW-CARBON ECONOMY 2018



Based on implemented policies, South Africa's **GHG emissions** are expected to increase to 658 MtCO_2e by 2030 (excl. forestry). This emission pathway is not compatible with the Paris Agreement.¹

The gap:

Is South Africa on track to stay below the Paris Agreement temperature limit? The less ambitious end of South Africa's **NDC** is not consistent with the Paris Agreement's temperature limit but would lead to a warming of between 3°C and 4°C if all other governments would follow a similar level of ambition. The more ambitious end of the range would actually be rated "2°C compatible".² South Africa's sectoral **policies** still fall short of being consistent with the Paris Agreement, especially on coal power and energy efficiency in industry, but the country's policy on renewable energy is promising.³

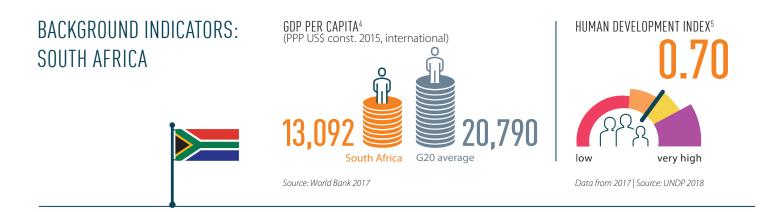


Recent developments: What has happened since the Paris conference? Although South Africa aims to decrease coal power in the long run, the government decided to build additional coal power plants until 2024. The 2018 Integrated Resource Plan envisages a boost for renewable energy until 2030, and the government recommenced the stalled renewables programme in 2018 by signing outstanding contracts with independent power producers.



Brown and green SHARE OF COAL IN ENERGY SUPPLY SHARE OF GREEN PUBLIC FINANCE ENERGY INTENSITY OF THE ECONOMY (Total Primary Energy Supply in TJ TO POWER performance: % per GDP in million US\$2015 (PPP)) % (2013-2015 annual average) Where does South Africa lead or lag compared to G20 **68**% countries? South Africa G20 average: 4.72 G20 average: 32% G20 average: 10% Data from 2017 | Source: Enerdata 2018 Data from 2017 | Source: Enerdata 2018 Source: Oil Change International 2017

This country profile is part of the **Brown to Green 2018** report. The full report and other G20 country profiles can be downloaded at: *http://www.climate-transparency.org/g20-climate-performance/g20report2018*



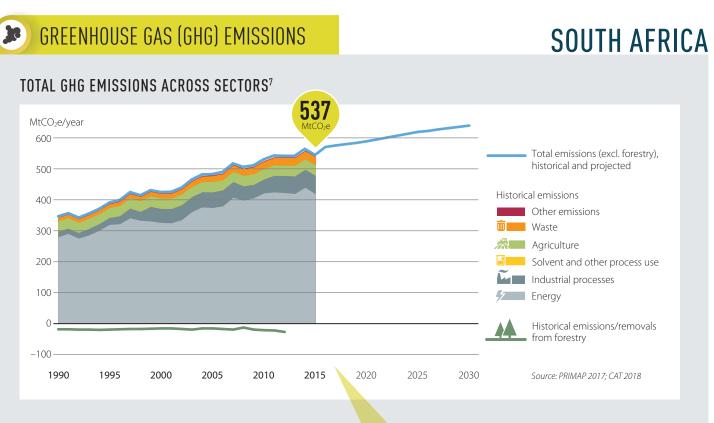
SOUTH AFRICA'S EXPOSURE TO CLIMATE IMPACTS⁶

This indicator shows the extent to which human society and its supporting sectors are affected by the future changing climate conditions based on an approximately 2°C scenario. This sectoral exposure will be even higher given that the efforts depicted in current NDCs will lead to an approximately 3°C scenario.





Own composition based on ND-GAIN 2017 (based on data for 2016)

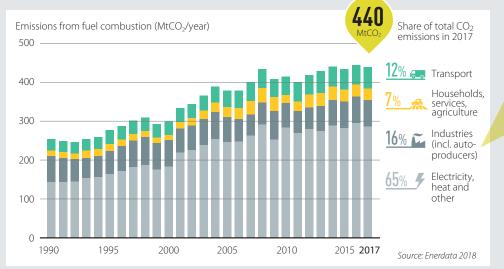


CCPI PERFORMANCE RATING OF GHG EMISSIONS PER CAPITA⁸



South Africa's emissions have increased by 57% between 1990 and 2015, mainly driven by emissions from energy. Emissions are expected to keep growing but at a slower pace.

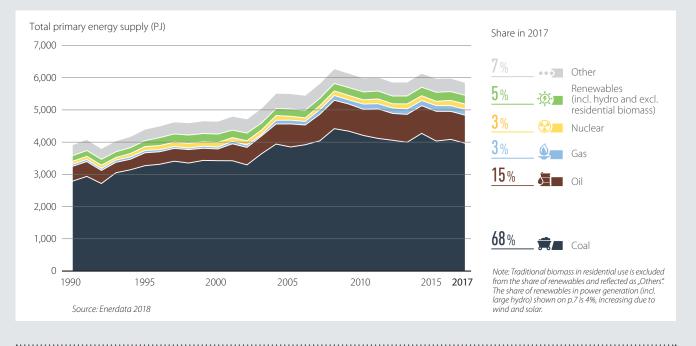
ENERGY-RELATED CO₂ EMISSIONS⁹



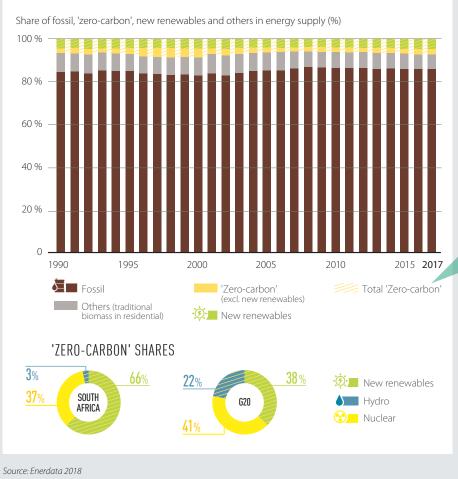
 CO_2 emissions from energy make up the largest share of total GHG emissions but have only increased slightly in recent years (+5%, 2012–2017). Emissions from electricity and heat generation started to decrease in 2017. DECARBONISATION

SOUTH AFRICA

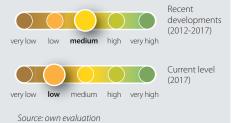
ENERGY MIX¹⁰



SHARE OF FOSSIL FUELS AND 'ZERO-CARBON' FUELS IN ENERGY SUPPLY¹¹



PERFORMANCE RATING OF SHARE OF FOSSIL FUELS¹²



Zero-carbon fuels include nuclear, hydropower, new renewables. These sources account for 7% of South Africa's energy supply, below the G20 average (14%), but the share increased by 17% (2012–2017).

PERFORMANCE RATING OF SHARE OF ZERO-CARBON TECHNOLOGY¹²





SOUTH AFRICA



Source: Enerdata 2018

"New renewables" excludes unsustainable renewable sources such as large hydropower. New renewables make up 5% of South Africa's energy mix, like the G20 average. Total production from new renewables only increased by 14% (2012–2017), which is well below the average G20 trend of +35%.

PERFORMANCE RATING OF NEW RENEWABLES¹²

medium

medium

high

high

very high

Recent developments (2012-2017)

Current level (2017)

very high

Source: own evaluation

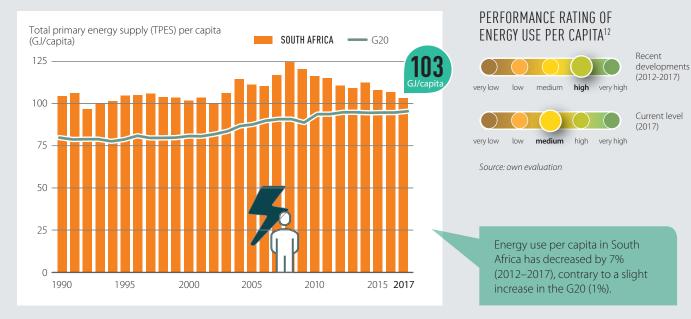
low

low

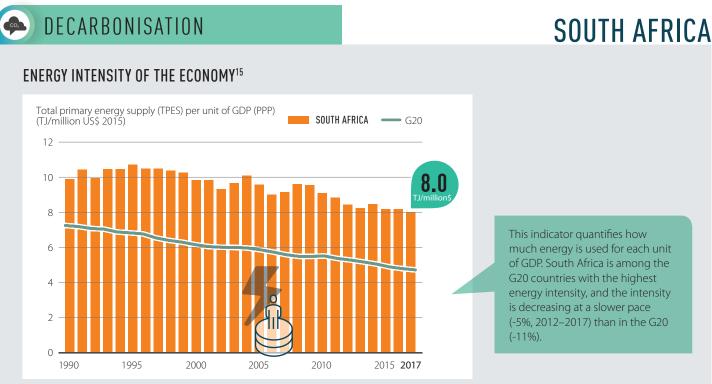
very low

very low

ENERGY USE PER CAPITA¹⁴



Source: Enerdata 2018

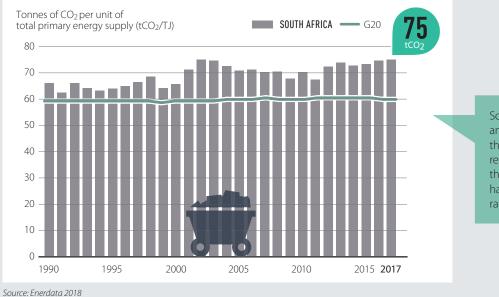


Source: Enerdata 2018

PERFORMANCE RATING OF ENERGY INTENSITY¹²



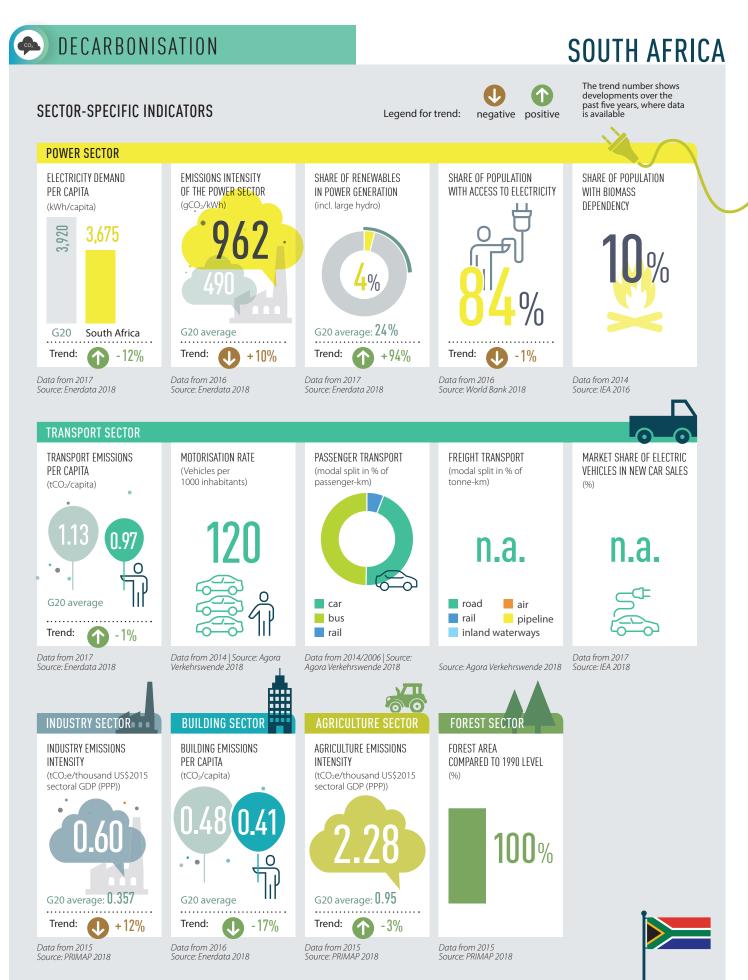
CARBON INTENSITY OF THE ENERGY SECTOR¹⁶



South Africa's energy sector is among those G20 countries with the highest carbon intensity, reflecting the high share of coal in the energy mix. South Africa also has one of the highest growth rates (+4%, 2012–2017).

PERFORMANCE RATING OF CARBON INTENSITY¹²

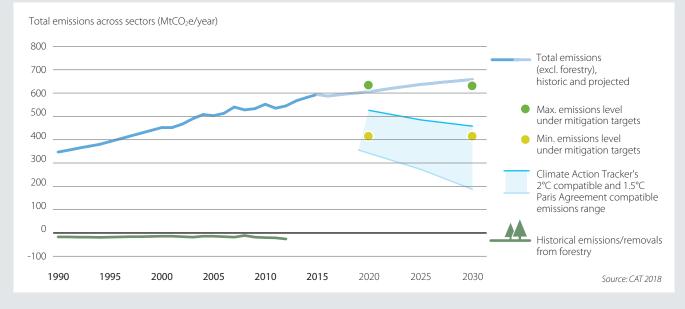




CLIMATE POLICY

SOUTH AFRICA

COMPATIBILITY OF CLIMATE TARGETS WITH THE PARIS AGREEMENT²



The CAT rates South Africa's NDC target "highly insufficient" as it is not ambitious enough to limit warming to below 2°C, let alone to 1.5°C. This rating is based on the less ambitious end of the NDC range because South Africa could be considered to have reached its NDC target if its emissions in 2030 were below this limit. Meeting the more ambitious end of the range would be rated "2°C compatible". In 2018, the government released the draft of its Integrated Resource Plan, which includes a shift away from coal, increased renewables and gas, and an end to the expansion of nuclear power.

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CLIMATE ACTION TRACKER (CAT) EVALUATION OF NDC²



NATIONALLY DETERMINED CONTRIBUTION (NDC)

MITIGATION			
Targets	Overall targets Emissions by 2025 and 2030 will be in a range between 398 MtCO ₂ e and 614 MtCO ₂ e, as defined in national policy		
	Coverage 100% of emissions covered (all sectors and six gases, material focus on three)		
Actions	Actions specified (sectors not mentioned)		

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)

FINANCE	
Conditio- nality	Not specified
Investment needs	Adaptation investment needs of US\$31.5 billion between 2020 and 2030 (pers. comm. UNFCCC Secretariat)
Actions	National actions to align financial flows mentioned (fiscal levers)
International market mechanisms	Not mentioned

Source: own compilation based on UNFCCC 2018





POLICY EVALUATION¹⁷

SOUTH AFRICA

The ratings evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit. They do not represent a complete picture of what is necessary.		low No action medium Some action high Significant action and a long-term vision frontrunner Significant action, and a long-term vision that is compatible with 1.5°C most important measures based on share of emissions and political relevance			
	low	medium	high	frontrunner	
GHG emissions target for 2050 or beyond					
Long-term low emissions development strategy					

Leaend:

South Africa adopted a Climate Change white paper in 2011, outlining the emission pathway towards 212 to 428 MtCO₂e per year in 2050. The draft climate change bill, expected to be adopted

.....

in 2019, will set the legal basis for establishing long-term emission trajectories and carbon budgets.

POWER



According to the draft Integrated Resources Plan (as yet unadopted) South Africa plans to expand renewable energy from 3.3 GW currently to above 25 GW installed capacity by 2030. This would equal about 26% of the electricity production by 2030, with the main share from wind and photovoltaic. No 2050 renewables target has been adopted so far. A programme to support renewable energy through power purchase agreements for independent power producers was put on ice in 2016 but kick-started again in 2018.

South Africa relies heavily on coal power. The draft electricity plan from 2018 envisages the construction of new coal power plants until 2024 but also assumes that the share of coal will be reduced to 20% of the energy supply by 2050.

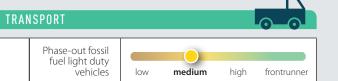
medium

high

frontrunner

low

Coal phase-out



South Africa's last energy efficiency strategy expired in 2015. The follow-up Draft Post-2015 Energy Efficiency Strategy (as yet unadopted) envisaged reducing energy use in transport by 39% by 2030 from 2015 levels. The country has no fuel economy or emission standards for LDVs in place, and no strategy to phase out fossil fuel LDVs.

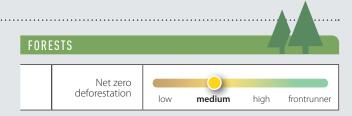
Low-carbon new industry installations low medium high frontrunner

South Africa's Draft Post-2015 Energy Efficiency Strategy (as yet unadopted) envisaged reducing energy consumption in industry by 16% by 2030 compared to 2015 levels but has no targets for new installations to be built as low-carbon. Support schemes mainly include voluntary energy audits and trainings.

Source: own evaluation

BUILDINGS Near-zero energy new buildings medium low high frontrunner

South Africa sets a goal for zero-emissions buildings by 2030 in its National Development Plan. This is in conjunction with an energy efficiency strategy to inform policy and regulation on promoting better use of energy within buildings.

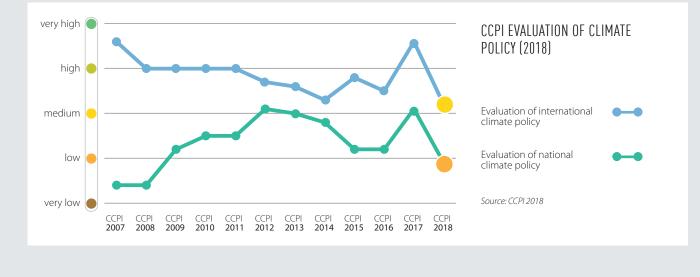


The Forestry 2030 Roadmap aims to promote sustainable forest management but does not contain a zero-deforestation goal.

CLIMATE POLICY

CCPI EXPERTS' POLICY EVALUATION¹⁸

South Africa's experts say that the country's 2030 GHG emission target and the 2030 renewables target are insufficient, and that national planning documents are outdated. They particularly criticise the lack of support for renewables, and thus rate the national climate policy performance as low. They rate South Africa's performance in international policy as medium, as it performs well in international negotiations but lacks ambition and implementation of policies at home. This evaluation is based on the status of policies in early 2018 and does not account for recent policy developments, especially on renewable energy.



JUST TRANSITION¹⁹

South Africa's economy is highly coal-dependent, and the coal mining sector employs 80,000 workers. South Africa also has high levels of poverty and unemployment; ensuring a just transition has therefore been explicitly recognised as a priority in national policy. Moreover, South Africa is the only country to directly refer to "an inclusive and just transition" in its NDC. Currently a social dialogue process has been launched by South Africa's National Planning Commission to develop just transition sustainable development pathways, but explicit transition policies for workers and communities are not yet in place. Implementation of a large-

scale renewable energy programme has begun to transition the electricity sector away from fossil fuels (mostly coal). This is seen by coal-dependent workers and communities as a potential threat and has led, for example, to a recent court case by unions to prevent the state-owned electricity utility from buying more renewable energy.



SOUTH AFRICA



SOUTH AFRICA Country Facts 2018

FINANCING THE TRANSITION

SOUTH AFRICA

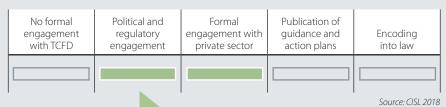
FINANCIAL POLICIES AND REGULATIONS

s

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.

APPROACHES TO IMPLEMENTING THE RECOMMENDATIONS OF THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)²⁰

This indicator establishes the degree of government engagement with the recommendations of the G20 Financial Stability Board's Task Force on Climate-Related Financial Disclosure.



The financial regulatory body of South Africa, the South African Financial Services Board (FSB), welcomed and called for the implementation of TCFD recommendations in 2017. That year, South Africa's National Treasury also convened financial sector regulatory agencies and industry associations to develop a sustainable finance roadmap, engaging private sector actors in TCFD relevant forums.

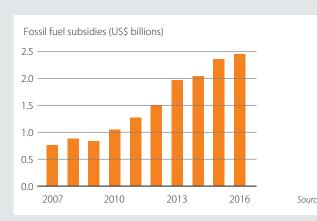
FISCAL POLICY LEVERS

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

FOSSIL FUEL SUBSIDIES

In 2016, South Africa's fossil fuel subsidies reached US\$2.4bn, from US\$0.8bn in 2007. From 2007 and 2016, subsidies were lower (US\$0.002) than the G20 average (US\$0.003) per unit of GDP. Subsidies primarily targeted production (96%), through direct budget support and tax exemptions. The largest subsidy is the value-added tax exemptions for gasoline, diesel and kerosene through broad objectives to support businesses (US\$1.2bn in 2016).





CARBON REVENUES

South Africa does not have a national carbon tax or emissions trading scheme. In 2019, there is a draft legislation to introduce a national carbon tax that would cover 75% of domestic emissions, including all types of fossil fuels. This will charge emissions at approximately US\$3 to US\$10 per tonne of CO_2 .

NO EXPLICIT CARBON PRICING SCHEME FROM 2007 TO 2017



Source: I4CE 2018

FINANCING THE TRANSITION

SOUTH AFRICA

PUBLIC FINANCE

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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.

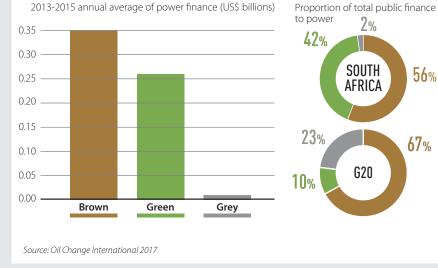
NATIONAL AND INTERNATIONAL PUBLIC FINANCE IN THE POWER SECTOR²¹

From 2013 to 2015, South Africa's public finance institutions spent an annual average of US\$0.4bn on brown, US\$0.3bn on green and US\$0.01bn on grey financing in the power sector, domestically and internationally. The largest transactions were the Development Bank of Southern Africa loan (US\$227m) to the Kilwa natural gas power plant in Tanzania, and the loan (US\$206m) to the Northern Cape wind farms in South Africa.

coal, oil and gas projects **brown** (and associated infrastructure)

large-scale hydropower, biofuels, biomass, nuclear, incineration, transmission, distribution, storage, energy efficiency, other general electricity support

renewable energy projects green (excluding grey financing)



PROVISION OF INTERNATIONAL PUBLIC SUPPORT

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

n Annex II of e not formally finance. While international te change via	OBLIGATION TO PROVIDE CLIMATE FINANCE UNDER UNFCCC	(YES) N				
pment banks, his report.	CONTRIBUTIONS THROUGH The Major Multilateral Climate funds ²²	Annual average contribution (mn US\$, 2015-2016)	Theme of support			
			Adaptatic	on Mitig	ation	Cross- cutting
	Note: See Technical Note for multilateral climate funds included and method to attribute amounts to countries	n.a.	n.a.	n	.a.	n.a.
	Source: Climate Funds Update 2017					<u> </u>
	BILATERAL CLIMATE FINANCE CONTRIBUTIONS ²³	Annual average contribution	Theme of support			
		(mn US\$, 2015-2016)	Mitigation	Adaptation	Cross- cutting	Other
	Source: Country reporting to UNFCCC	n.a.	n.a.	n.a.	n.a.	n.a.

ANNEX

For more detail on sources and methodologies, please refer to the Technical Note at: https://www.climate-transparency.org/wp-content/uploads/2018/11/Technical-Note_data-sources-and-methodology.pdf

- 1) The 2030 projections of the future development of greenhouse gas (GHG) emissions under current policies are based on the Climate Action Tracker (CAT) estimates.
- 2) The CAT is an independent scientific analysis that tracks progress towards the globally agreed aim of holding warming to well below 2°C, and pursuing efforts to limit warming to 1.5°C. The CAT "Effort Sharing" assessment methodology applies state-of-the-art scientific literature on how to compare the fairness of government efforts and (Intended) Nationally Determined Contribution ((I) NDC) proposals against the level and timing of emission reductions consistent with the Paris Agreement. The assessment of the temperature implications of a country's NDC is based on the assumption that all other governments would follow a similar level of ambition.
- 3) This assessment is based on the policy evaluation on page 9 of this Country Profile.
- 4) Gross Domestic Product (GDP) per capita is calculated by dividing GDP with mid-year population figures. GDP is the value of all final goods and services produced within a country in a given year. Here GDP figures at purchasing power parity (PPP) are used. Data for 2017.
- 5) The Human Development Index (HDI) is a composite index published by the United Nations Development Programme (UNDP). It is a summary measure of average achievement in key dimensions of human development. A country scores higher when the lifespan is higher, the education level is higher, and GDP per capita is higher.
- 6) The ND-GAIN index summarises a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. This report looks only at the exposure indicators as part of the vulnerability component of the ND-GAIN index for six sectors. It displays the exposure scores provided by the ND-GAIN on a scale from low (score: 0) to high (score: 1).
- 7) The indicator covers all Kyoto gases showing historic emissions in each of the IPCC source categories (energy, industrial processes, agriculture, etc.). Emissions projections (excl. forestry) under a current policy scenario until 2030 are taken from the Climate Action Tracker and scaled to the historical emissions from PRIMAP (see Brown to Green Report 2018 Technical Note).

- 8) The ratings on GHG emissions are taken from the Climate Change Performance Index (CCPI) 2018. The rating of "current level compared to a well below 2°C pathway" is based on a global scenario of GHG neutrality in the second half of the century and a common but differentiated convergence approach.
- 9) CO₂ emissions cover only the emissions from fossil fuels combustion (coal, oil and gas) by sector. They are calculated according to the UNFCCC methodology (in line with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories).
- 10) Total primary energy supply data displayed in this Country Profile does not include non-energy use values. Solid fuel biomass in residential use has negative environmental and social impacts and is shown in the category "other".
- 11) Zero-carbon fuels include nuclear, hydropower and new renewables (non-residential biomass, geothermal, wind, solar).
- 12) Climate Transparency ratings assess the relative performance across the G20. A high scoring reflects a good effort from a climate protection perspective but is not necessarily 1.5°C compatible.
- 13) New renewables include non-residential biomass, geothermal, wind and solar energy. Hydropower and solid fuel biomass in residential use are excluded due to their negative environmental and social impacts.
- 14) Total primary energy supply (TPES) per capita displays the historical, current and projected energy supply in relation to a country's population. Alongside the intensity indicators (TPES/GDP and CO₂/TPES), TPES per capita gives an indication on the energy efficiency of a country's economy. In line with a well-below 2°C limit, TPES per capita should not grow above current global average levels. This means that developing countries are still allowed to expand their energy use to the current global average, while developed countries have to simultaneously reduce it to that same number.
- 15) TPES per GDP describes the energy intensity of a country's economy. This indicator illustrates the efficiency of energy usage by calculating the energy needed to produce one unit of GDP. Here GDP figures at PPP are used. A decrease in this indicator can mean an increase in efficiency but also reflects structural economic changes.
- 16) The carbon intensity of a country's energy sector describes the CO₂ emissions per unit of total primary energy supply and gives an indication of the share of fossil fuels in the energy supply.



ANNEX (continued)

- 17) The selection of policies rated and the assessment of 1.5°C compatibility are informed by the Paris Agreement and the Climate Action Tracker (2016): "The ten most important short-term steps to limit warming to 1.5°C". The table below displays the criteria used to assess a country's policy performance. See the Brown to Green Report 2018 Technical Note for the sources used for this assessment.
- 18) The CCPI evaluates a country's performance in national climate policy, as well as international climate diplomacy through feedback from national experts from non-governmental organisations to a standardised questionnaire.
- 19) See the Brown to Green 2018 Technical Note for the sources used for this assessment.
- 20) The University of Cambridge Institute for Sustainability Leadership (CISL) in early 2018 reviewed the progress made by the national regulatory agencies of G20 members in making the Task Force on Climate-related Financial Disclosures (TCFD) recommendations relevant to their national contexts. See the Brown to Green Report 2018 Technical Note for more information on the assessment.



- 21) This data includes bilateral public finance institutions such as national development banks and other development finance institutions, overseas aid agencies, export credit agencies, as well as key multilateral development banks. The analysis omits most finance delivered through financial intermediaries and significant volumes of multilateral development bank (MDB) development policy finance (due to a lack of clarity on power finance volumes). Given a lack of transparency, other important multilateral institutions in which G20 governments participate are not covered. See the Brown to Green Report 2018 Technical Note for further details.
- 22) Finance delivered through multilateral climate funds comes from Climate Funds Update, a joint ODI/Heinrich Boell Foundation database that tracks spending through major multilateral climate funds. See the Brown to Green Report 2018 Technical Note for multilateral climate funds included and method to attribute approved amounts to countries.
- 23) Bilateral finance commitments are sourced from Biennial Party reporting to the UNFCCC. Financial instrument reporting is sourced from the OECD-DAC; refer to the Brown to Green Report 2018 Technical Note for more detail. Figures represent commitments of Official Development Assistance (ODA) funds to projects or programmes, as opposed to actual disbursements.

On endnote 17)	Criteria description				
	Low	🗕 Medium	ligh	Frontrunner	
GHG emissions target for 2050 or beyond	No emissions reduction target for 2050 or beyond	Existing emissions reduction target for 2050 or beyond	Existing emissions reduction target for 2050 or beyond and clear interim steps	Emissions reduction target to bring GHG emissions to at least net zero by 2050	
Long-term low emissions development strategy	No long-term low emissions strategy	Existing long-term low emissions strategy	Long-term low emissions strategy includes interim steps and/or sectoral targets	Long-term low emissions strategy towards full decarbonisation in the second half of the century; includes interim steps and/ or sectoral targets, plus institutions and measures in place to implement and/or regularly review the strategy	
Renewable energy in power sector	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), average 0-25	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), average 26-60	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), average 61-100	Allianz Monitor 2018 Category 1.2 (targets) and 2 (policies), 61-100 plus 100% renewables in the power sector by 2050 in place	
Coal phase-out	No consideration or policy in place for phasing out coal	Significant action to reduce coal use implemented or coal phase-out under consideration	Coal phase-out decided and under implementation	Coal phase-out date compatible with 1.5°C	
Phase-out of fossil fuel light duty vehicles (LDVs)	No policy or emissions performance standards for LDVs in place	Energy/emissions performance standards or support for efficient LDVs	National target to phase out fossil fuel LDVs in place	Ban on new fossil-based LDVs by 2025/30	
Near zero-energy new buildings	No policy or low emissions building codes and standards in place	Building codes, standards or fiscal/financial incentives for low emissions options in place	National strategy for near zero-energy buildings (at least for all new buildings)	National strategy for near zero-energy buildings by 2020/25 (at least for all new buildings)	
Low-carbon new industry installations	No policy or support for energy efficiency in industrial production in place	Support for energy efficiency in industrial production (covering at least two of the country's sub-sectors (e.g. cement and steel production))	Target for new installations in emissions-intensive sectors to be low-carbon	Target for new installations in emissions-intensive sectors to be low-carbon after 2020, maximising efficiency	
Net zero deforestation	No policy or incentive to reduce deforestation in place	Incentives to reduce deforestation or support schemes for afforestation / reforestation in place	National target for reaching zero deforestation	National target for reaching zero deforestation by 2020s or for increasing forest coverage	

CLIMATE TRANSPARENCY



http://www.climate-transparency.org/g20-climate-performance/g20report2018

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