CLIMATE TRANSPARENCY REPORT | 2020  BRAZIL

1.5°C WORLD

Brazil needs to reduce its emissions to below 411 MtCO$_2$e by 2030 and to below 93 MtCO$_2$e by 2050 to be within its 1.5°C ‘fair-share’ compatible pathway. Under Brazil’s 2025 NDC target, its emissions would only be limited to 991 MtCO$_2$e (in 2025) and 890 MtCO$_2$e (in 2030). Due to the increase in deforestation emissions Brazil is not on track to meet its economy-wide NDC targets and will miss its 2020 deforestation targets by a large margin. All figures exclude land use emissions and are based on pre-COVID-19 projections.

PREVENT ILLEGAL DEFORESTATION

Urgently reinstate and strengthen policies on monitoring and preventing illegal deforestation, including on indigenous lands.

INVEST IN A RAIL SYSTEM

Invest in a rail system for both passengers and load transport, and develop a plan for the electrification of the transport sector.

PROMOTE SUSTAINABLE AGRICULTURE

Develop a post-2020 plan for implementing mitigation in the agriculture sector, including restoring degraded pastureland and promoting sustainable methods.

THE LATEST ELECTRICITY CAPACITY AUCTION

The latest electricity capacity auction in October 2019 resulted in three quarters of the 3 GW contracted capacity going to renewable energy (of which 1,040 MW was wind and 530 MW was solar). Solar offered the cheapest prices on the auction.

References: Sánchez Molina and Bellini, 2019; Ministério de Minas e Energia, 2019; Philip M. Fearnsıde, 2020; Angelo and Rittl, 2019; Climate Action Tracker, 2019; Observatório do Clima, 2020a

CORONAVIRUS RECOVERY

By the beginning of October 2020, Brazil was the second hardest-hit country by COVID-19, with approximately 5 million cases and about 150,000 deaths. The federal government provided important financial support for up to 126 million poor people (60% of population) from April to August and is planning to extend it until the end of the year. This financial support was key to assure that this important segment of the population could survive while economic activities were severely curtailed.

Reference: Governo do Brasil, 2020
SOCIO-ECONOMIC CONTEXT

Human Development Index

The Human Development Index reflects life expectancy, level of education, and per capita income. Brazil’s high score masks high inequality levels.

Population and urbanisation projections (in millions)

Brazil’s population is expected to increase by approximately 8% by 2050 and become even more urbanised.

Death rate attributable to air pollution

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

JUST TRANSITION

The Brazilian National Adaptation Plan to Climate Change, published in 2016 under the previous administration, recognises the need to achieve a just transition, but does not offer a clear strategy on how to achieve it. In Brazil, energy transition began decades ago with the first oil crisis in the 1970s, which is possibly why a just transition is not in the spotlight. Renewables are not new in the country and already contribute a large share of energy generation. However, the government has recently been investing heavily in oil and gas exploration and production. This risks lock-in to carbon intensive infrastructure and jobs that will need to be phased out in the longer term. A green energy transition in Brazil has many potential opportunities to be a just one. Growth in Brazil’s renewable energy sector has substantial potential for job creation, with more jobs created than lost in the fossil fuel industry. Distributed renewable power generation can also increase electricity access in rural areas, and can provide income and jobs in unproductive areas. At the same time, reducing fossil fuel consumption (e.g. coal power plants, internal combustion engines) can lead to cleaner air and water, with associated health benefits.

References: Government of Brazil, 2016; Wills and Westin, 2018
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.

Brazil is vulnerable to climate change and adaptation actions are needed.

On average, 145 fatalities and almost USD 1.72bn losses occur yearly due to extreme weather events.

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

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

0.08 DEATHS PER 100,000 INHABITANTS

Annual average losses (USD mn PPP)

0.06 PER UNIT GDP (%)

Source: Based on Germanwatch, 2019

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

Impact ranking scale:

Very low Low Medium High Very high

<table>
<thead>
<tr>
<th>1.5°C</th>
<th>2°C</th>
<th>3°C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

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

In the last few years, Brazil has faced a strong recession and a rapidly increasing fiscal deficit. Due to the budget ceiling passed in 2016 by the Congress, there is little space for increasing expenses or additional investments. The government is currently discussing with the Congress ways to circumvent this situation and liberate resources to be invested in the COVID-19 recovery. There have been no discussions about considering environmentally-friendly requirements once funds are eventually released.
Adaptation readiness

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

Brazil's observed adaptation readiness is well below the G20 average. Socio-economic developments in line with SSP1 would produce improvements in readiness to bring it in line with the 2015 G20 average between 2040 and 2045.

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

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

Source: Andrijevic et al., 2020

ADAPTATION POLICIES

National Adaptation Strategies

<table>
<thead>
<tr>
<th>Document name</th>
<th>Publication year</th>
<th>Fields of action (sectors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Adaptation Plan for Climate Change</td>
<td>2016</td>
<td>Agriculture, Biodiversity, Coastal areas and fishing, Education and research, Energy and industry, Finance and insurance, Forestry, Health, Infrastructure, Tourism, Transport, Urbanism, Water</td>
</tr>
</tbody>
</table>

M&E process: Assigned to the Executive Group on Climate Change.

Nationally Determined Contribution (NDC): Adaptation

<table>
<thead>
<tr>
<th>Targets</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not mentioned</td>
<td>Actions specified in the following sectors: agriculture, biodiversity and ecosystems, cities and urban development, disaster risk management, industry and mining, infrastructure, vulnerable populations, water resources, health, food and nutritional security, coastal zones</td>
</tr>
</tbody>
</table>
2. MITIGATION
REDDUCING 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

Brazil’s emissions, excluding forestry, have risen by 84% since 1990 (and by 11% since 2010). The government’s climate target for 2030 (-43% below 2005 levels) is not in line with a 1.5°C ‘fair-share’ compatible pathway.

Source: Climate Action Tracker, 2019

In 2030, global CO₂ emissions need to be 45% below 2010 levels and reach net-zero by 2050. Global energy-related CO₂ emissions must be cut by 40% below 2010 levels by 2030 and reach net-zero by 2060.

Source: Rogelj et al., 2018

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

Brazil’s emissions (excl. land use) have increased by 84% between 1990 and 2017. Emissions growth has plateaued in recent years, but is expected to resume growing until at least 2030. Brazil will need to scale up climate action to meet its 2025 NDC and indicative 2030 target, with even more effort required to become 1.5°C ‘fair-share’ compatible. Progress made between 2005 and 2012 in reducing emissions from deforestation has been partially reversed in recent years as deforestation rose 122% from 2012 to 2019. Projections to 2030 are uncertain but could see a continuation of current levels or, if forest governance continues to weaken, a substantial increase in emissions.

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

Energy-related CO₂ emissions by sector

The third largest driver of GHG emissions, after deforestation and agriculture, are energy-related CO₂ emissions from fuel combustion. In Brazil, energy sector CO₂ emissions peaked in 2014 and have remained relatively stable since 2016. The transport sector is the largest contributor, with 47% of the share.

Source: Enerdata, 2020

References: Mongabay, 2020; Observatório do Clima, 2020a; Vivid Economics, 2020; World Bank, 2020

CORONAVIRUS RECOVERY

The government has provided financial support to the airline industry without any conditions for a green recovery. A lack of specific support for renewable energy providers may leave them at a disadvantage relative to larger fossil fuel companies. With mounting domestic and international pressure to reduce deforestation rates, the Bolsonaro administration has placed a moratorium on burning and has brought in the military to boost the environmental enforcement capacities that the administration severely weakened over the past few years.

References: Mongabay, 2020; Observatório do Clima, 2020a; Vivid Economics, 2020; World Bank, 2020
**ENERGY OVERVIEW**

**Fossil fuels make up 52% of Brazil’s energy mix** (including power, heat, transport fuels, etc). Due to the high share of renewables, Brazil’s energy mix is much less carbon intensive than the G20 average.

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

Source: Rogelj et al., 2018

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**Energy Mix**

This graph shows the fuel mix for all energy supply, including energy used for electricity generation, heating, cooking, and transport fuels. Fossil fuels (oil, coal and gas) make up 52% of the Brazilian energy mix, which is well below the G20 average. This is due to Brazil’s high use of renewable energy.

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**Solar, Wind, Geothermal, and Biomass Development**

Solar, wind, geothermal and biomass account for 31% of Brazil’s energy supply – the G20 average is only 6%. In the last five years, the share of these sources in total energy supply has increased by around 20%, less than the G20 average (+28.1%, 2014-2019). Bioenergy (for electricity, and biofuels for transport and heat) makes up the largest share.

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

- **5-year trend (2014-2019):** Low
- **Current year (2019):** Very high

Source: own evaluation

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**Source:**

- Energy Mix: Enerdata, 2020
- Solar, Wind, Geothermal, and Biomass Development: Enerdata, 2020
Carbon Intensity of the Energy Sector

**Tonnes of CO₂ per unit of total primary energy supply (tCO₂/TJ)**

![Graph showing carbon intensity trend](chart)

Source: Enerdata, 2020

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

- **5-year trend (2014-2019):** Very high
- **Current year (2019):** Very high

Carbon intensity shows how much CO₂ is emitted per unit of energy supply. Brazil’s energy sector has one of the lowest carbon intensities in the G20, reflecting the high share of hydropower and biofuels in the energy mix. Since 2014, Brazil’s carbon intensity has been on a slight downward trend.

Source: own evaluation

**Energy supply per capita**

<table>
<thead>
<tr>
<th>(GJ/capita)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil: 57</td>
</tr>
<tr>
<td>G20 average: 97</td>
</tr>
</tbody>
</table>

**Sources:** Enerdata, 2020. The World Bank, 2019b


- **Brazil:** -8.4%
- **G20 average:** +1.9%

The level of energy use per capita is closely related to economic development, climatic conditions and the price of energy.

At 57 GJ/capita, energy supply per capita in Brazil is well below the G20 average and has followed a downward trend over the past five years (-8.4%, 2014-2019), in contrast to the increasing G20 average of 1.9%.

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

- **5-year trend (2014-2019):** Very high
- **Current year (2019):** Very high

Source: own evaluation

**Energy intensity of the economy**

<table>
<thead>
<tr>
<th>(TJ/PPP USD2015 millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil: 3.68</td>
</tr>
<tr>
<td>G20 average: 4.46</td>
</tr>
</tbody>
</table>

**Data for 2018. Source:** Enerdata, 2020

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

- **Brazil:** +1.7%
- **G20 average:** -11.6%

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

Brazil’s energy intensity remains below the G20 average, but increased by 1.7% from 2013 to 2018, in contrast to the G20’s downward trend of 11.6%.

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

- **5-year trend (2013-2018):** Very low
- **Current year (2018):** High

Source: own evaluation
Only 9% of Brazil’s CO₂ emissions are from electricity and heating. Brazil produces 82% of electricity from renewable energy sources, mostly from hydropower. There are plans to increase the share of wind and solar in the electricity mix.

**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.

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

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**STATUS OF DECARBONISATION**

### Electricity mix

Brazil generates 82% of its power from renewable sources – the highest level in the G20 – and around 63% from hydropower alone. Fossil fuels (oil, coal and gas) account for only a small share, although generation from coal and gas has increased over the past decade.

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

82% Brazil  
27% G20 average

Source: Enerdata, 2020

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

5-year trend (2014-2019): Low  
Current year (2019): Very high

Source: own evaluation
Brazil already has a high share of hydropower and aims to increase the share of other renewables to 23% by 2030. In 2019, solar energy was included in Brazil’s electricity capacity auction for the first time. The latest 10-year Energy Plan 2029 envisages an installed capacity of 8.4 GW of solar and 24.4 GW of wind by 2029. At the end of 2019 the government published a 2050 Energy Plan outlining Brazil’s long-term strategy for the energy sector.

References: own evaluation, based on Ministério de Minas e Energia, 2019; Climate Action Tracker, 2019

For each kilowatt hour of electricity, 75gCO₂ are emitted in Brazil. This is less than a fifth of the G20 average, reflecting the high share of renewables in Brazil’s power generation. Emissions intensity has decreased by 47% from 2014-2019, much higher than the decrease in the G20 rate (10%). Power generation from oil in Brazil has declined since 2014, while renewables generation has grown by almost a fifth.

Decarbonisation rating: emissions intensity compared to other G20 countries

<table>
<thead>
<tr>
<th>5-year trend (2014-2019):</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current year (2019):</td>
<td>Very high</td>
</tr>
</tbody>
</table>

Source: own evaluation

Brazil’s power sector has a relatively small but stable contribution from coal power generation (~4%). According to the latest 10-year Energy Plan, some coal plants will retire before the end of the decade, but others will likely be brought online (up to 1.5 GW of capacity additions) such that capacity in 2029 will be about 2 GW (compared with 3.6 GW today).

References: own evaluation, based on Ministério de Minas e Energia, 2019
CO₂ emissions from the transport sector peaked in 2014, but still contribute almost half of Brazil’s energy-related CO₂ emissions. Despite the large proportion of biofuels in the sectoral energy mix (24%), fossil fuels still dominate. In order to stay within a 1.5°C limit, passenger and freight transport need to be further decarbonised.

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

Source: Rogelj et al., 2018

Electricity and biofuels make up 24.5% of the energy mix in transport – the highest level in the G20. However, with biofuels contributing 24.3% and electricity only 0.2%, Brazil is lagging well behind other G20 countries in electric vehicle deployment.

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

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

Data for 2018: Sources: Enerdata, 2020; The World Bank, 2019b

Decarbonisation rating: transport emissions compared to other G20 countries

Source: own evaluation
Aviation emissions per capita\(^6\)
\(\text{tCO}_2/\text{capita}\)

<table>
<thead>
<tr>
<th>Brazil</th>
<th>G20 average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.08</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Data for 2017. Source: Enerdata, 2020

Decarbonisation rating: aviation emissions compared to other G20 countries

- 5-year trend (2012-2017):
  - Brazil: \(-12.8\%\)
  - G20 average: \(+18.7\%\)

Current year (2017):
- Brazil: \(+1.0\%\)
- G20 average: \(+1.6\%\)

Source: own evaluation

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

Motorisation rate

162 VEHICLES PER 1,000 INHABITANTS (2014)

Source: Vieweg et al., 2018

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

0.02% MARKET SHARE OF ELECTRIC VEHICLES

Data for 2018. Source: IEA, 2019

POLICY ASSESSMENT

Phase out fossil fuel cars

In its NDC, the government set out plans to almost double the use of biofuels, although it has no plans for phasing out fossil fuel cars. The “Rota 2030” regulation, published in 2018, has set a mandatory efficiency improvement target of 11% by 2022 for vehicles and supports EVs through tax incentives. However, the market share of EVs in new car sales is very low, and the government does not anticipate EVs playing a big role before 2030. Instead, Brazil is focused on increasing the use of bioethanol and biodiesel.

References: own evaluation, based on Empresa de Pesquisa Energética, 2019; Pavlenko and Araujo, 2019

Phase out fossil fuel heavy-duty vehicles

Emissions standards for HDVs in Brazil were updated in 2012. However, a more stringent standard was announced in late 2018 and will come into force in 2023, making Brazil the last major automotive market to adopt one equivalent to Euro VI. However, Brazil has no strategy for reducing absolute emissions from freight transport, and Brazil’s freight infrastructure remains inefficient.

References: own evaluation, based on Basso, 2019

Modal shift in (ground) transport

The 2012 Brazilian Urban Mobility Policy aims to increase the use of public transport and non-motorised travel in urban areas, and mandates large cities to develop mobility plans. Very few cities have finalised or implemented their plans, but the government recently released USD 60mn funds for urban mobility projects in 13 cities. For freight transport, the Plan for Logistics and Transportation aims to increase the share of rail from 25% in 2005 to 35% in 2025.

References: own evaluation, based on Nassar, 2018; BNamericas, 2020
BRAZIL

Mitigation

1.5°C

Climate Transparency Report | Brazil 2020

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

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

Source: Rogelj et al., 2018

Status of Decarbonisation

Building emissions per capita (incl. indirect emissions) (tCO₂/capita)

<table>
<thead>
<tr>
<th>Source</th>
<th>Enerdata, 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>0.18</td>
</tr>
<tr>
<td>G20 average</td>
<td>1.48</td>
</tr>
</tbody>
</table>

Building-related emissions per capita are little over a tenth of the G20 average. In contrast to the G20 average, which has grown by nearly 2% over the past five years (2014-2019), Brazil has managed to reduce building emissions per capita by 37%.

Source: own evaluation, based on Basso, 2019

Decarbonisation rating: building emissions compared to other G20 countries

5-year trend (2014-2019):

- Very high

Current year (2019):

- Very high

Policy Assessment

Near-zero energy new buildings

Brazil has voluntary building codes as well as rating systems (e.g. the Zero Energy Standard). It also requires the disclosure of energy use for new residential and non-residential buildings. Building codes, however, fall under the authority of municipalities, making coordination at the national level difficult, and there is no strategy for requiring all new buildings to adhere to near-zero energy standards.

Source: own evaluation, based on Basso, 2019

Renovation of existing buildings

There are no policies related to energy retrofitting of existing buildings in Brazil.

Reference: own evaluation
Industry-related emissions make up 27% of energy-related CO₂ emissions in Brazil (as of 2019). Brazil’s industrial emissions peaked in 2014, but have not declined far from this peak. Policies for reducing industrial emissions are insufficient to bring Brazil on a 1.5°C track.

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

Source: Enerdata, 2020

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

Source: Rogelj et al., 2018

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**STATUS OF DECARBONISATION**

**Industry emissions intensity**

(tCO₂e/USD2015 GVA)

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

**Carbon intensity of cement production**

(kgCO₂/tonne product)

Brazil: 577
World average: 614

Brazil’s cement industry is less emissions-intensive than the world average.

Data for 2016.
Sources: CAT decarbonisation data portal, 2020; Climate Action Tracker, 2019

**Carbon intensity of steel production**

(kgCO₂/tonne product)

Brazil: 1,443
World average: 1,900

Steel production and steelmaking are significant GHG emission sources, and challenging to decarbonise. Brazil’s steel industry is less emissions-intensive than the world average.

Data for 2016.
Sources: World Steel Association, 2018; CAT decarbonisation data portal, 2020

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**POLICY ASSESSMENT**

**Energy Efficiency**

The 2011 National Policy on Energy Efficiency (PNEe) aims to improve energy efficiency in industry, among other sectors. However, according to the International Energy Agency (IEA), only 7% of Brazil’s industrial energy use is covered by mandatory energy efficiency policies (as of 2017), despite the many opportunities in this sector. Since 2013, when Brazil passed its Industrial Sector Plan for Mitigation (2012-2020), there have been no new policies for improving industrial energy efficiency.

Reference: own evaluation, based on Climate Laws, 2020
In order to stay within the 1.5°C limit, Brazil needs to make the land use and forest sector a net sink of emissions, e.g. by halting the deforestation of the Amazonian rainforest, fighting illegal logging, and restoring destroyed forest areas.

Global deforestation needs to be halted and changed to net CO₂ removals by around 2030.

Source: Rogelj et al., 2018

Global tree-cover loss

Depletion rates have been on the rise in Brazil since 2012: between 2012 and 2019, deforestation has increased by 122%. According to Brazil’s National Institute for Space Research (INPE), more than 1 Mha of land was deforested in Brazil between August 2018 and July 2019, an increase of 34% above the previous year, and the highest rate of deforestation seen since 2008. Indigenous lands were particularly affected, with a growth in deforestation by 90%. Increasing deforestation is linked to a weakening of institutional and legal frameworks for environmental protection, including budget cuts for monitoring and enforcement agencies and a roll-back of environmental regulations show that Brazil is going in the wrong direction with regards to achieving net-zero deforestation.

Reference: own evaluation

According to Brazil’s NDC, Brazil aims to restore and reforest 12m hectares of forest, to achieve zero illegal deforestation by 2030 and to compensate for GHG emissions from legal suppression of vegetation by 2030. However, recent budget cuts for monitoring and enforcement agencies and a roll-back of environmental regulations show that Brazil is going in the wrong direction with regards to achieving net-zero deforestation.

Reference: own evaluation

Methane emissions (mainly enteric fermentation) need to decline by 10% by 2030 and 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

In Brazil, the largest sources of GHG emissions in the agricultural sector are livestock manure, digestive processes in animals (enteric fermentation), and the use of synthetic fertilisers. Recovering degraded pastures, improved manure management practices, dietary changes and a more efficient use of fertiliser could help reduce emissions in this sector.

Reference: Stabile et al., 2020

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

<table>
<thead>
<tr>
<th>Targets</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>37% GHG emissions reduction compared to 2005 by 2025, 43% by 2030 (decarbonisation of the economy by the end of the century)</td>
<td>Actions specified in the following sectors: energy, land use and forestry, agriculture, industry, transport</td>
</tr>
</tbody>
</table>

Climate Action Tracker (CAT) evaluation of NDC and actions

- Critically Insufficient
- Highly Insufficient
- Insufficient
- 2°C Compatible
- 1.5°C Compatible
- Role Model

NDCs rated “insufficient” are in the least stringent part of a country’s ‘fair-share’ range and not consistent with holding warming 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 over 2°C and up to 3°C.

To peak emissions and rapidly decrease levels afterward as required by the Paris Agreement, Brazil will need to reverse the current trend of weakening climate policy by sustaining and strengthening policy implementation in the forestry sector and accelerating mitigation action in other sectors — including a reversal of present plans to expand fossil fuel energy sources.

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

To ensure clarity, transparency and understanding, it is recommended that Brazil provides additional detailed information in the upcoming NDC Update (compared to the existing NDC), including:

- Clarify if revisions in the National Inventory will affect absolute emission targets
- Explicitly mention the length of the time frame or the period of implementation
- Provide information on institutional arrangements for developing and implementing the NDCs, incl. consultation processes, public participation, and engagement with local communities and indigenous peoples, in a gender-responsive manner.

AMBITION: LONG-TERM STRATEGIES

<table>
<thead>
<tr>
<th>Status</th>
<th>The Brazil Forum for Climate Change submitted a proposal for reaching net-zero emissions by 2060 to former president Michel Temer in December 2018. As yet, there is no evidence that President Bolsonaro intends to follow up on this.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2050 target</td>
<td>No</td>
</tr>
<tr>
<td>Interim steps</td>
<td>No</td>
</tr>
<tr>
<td>Sectoral targets</td>
<td>No</td>
</tr>
<tr>
<td>Net-zero target</td>
<td>Brazil’s NDC mentions that Brazil will strive to decarbonise the economy by the end of the century.</td>
</tr>
</tbody>
</table>

The Paris Agreement invites countries to communicate mid-century, long-term, and low-GHG emissions development strategies by 2020. Long-term strategies are an essential component of the transition toward net-zero emissions and climate-resilient economies.
3. FINANCE
MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS

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

Brazil’s fossil fuel subsidies totalled USD 8.0bn in 2019, mainly for petroleum. The country has no explicit carbon pricing scheme, but requires financial institutions to disclose climate risks.

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 by fuel type

In 2019, Brazil’s fossil fuel subsidies totaled USD 8bn (compared to USD 27.4bn in 2010 and the last decade’s peak of USD 35.7bn in 2012). 68% of the subsidies quantified were for the consumption of fossil fuels, and the remainder for their production. The highest amount of quantified subsidies was for petroleum, at USD 5.9bn, followed by natural gas, at USD 1.9bn. The largest subsidy is the Special Tax Regime for Goods used in the Exploration and Production of Oil and Natural Gas Fields (REPETRO), resulting in a USD 2.1bn subsidy to petroleum and natural gas.

Source: OECD-IEA Fossil Fuel Support database, 2020

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

Carbon Pricing and Revenues

No explicit carbon pricing scheme has existed in Brazil from 2007 to 2019. Brazil is considering implementing a national carbon tax or emissions trading scheme. However, the level of pricing for permits or taxation has yet to be determined, alongside the proposed start date and sectors to be covered.

The Brazilian government has approved a financial support programme for 2020, including a reallocation of budget for health expenditures and temporary income support for informal workers and the self-employed.

The Brazilian government has introduced a number of policy measures to protect energy supply during the crisis, including rules for new syndicated loans for the sector. Power auctions scheduled for 2020 have been postponed, which may cause challenges for renewable energy developers. Additional support will be needed for renewable and distributed energy providers, many of whom are small companies and are likely to be severely affected by declining demand.

Source: World Bank, 2020
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, Brazil provided an average of USD 72m per year in public finance for the coal sector and USD 56m per year for the oil and gas sector, totalling around USD 128m per year in public finance directed to fossil fuels. This compares favourably to the previous period 2013-2015, when a total of USD 2.9bn is estimated to have been directed on average every year to the fossil fuel sector coming from the country’s public finance institutions. Brazil does not have an Export Credit Agency but provides export credits through the Brazilian Development Bank (BNDES); this is the public finance institution predominantly financing fossil fuels in the country. Coal-fired power plants are also being financed through other channels.

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

No data available

Multilateral climate finance contributions

No data available

Core / General Contributions

No data available

Theme of support:

No data available

No data available

No data available

Brazil is not listed in Annex II of the UNFCCC and is therefore not formally obliged to provide climate finance. Despite this, Brazil continues to provide international public finance for mitigation via the Global Environment Facility (GEF) Trust Fund, although Brazil’s last commitment was not deposited in 2017 and was carried forward to the next replenishment cycle (GEF, 2018). While Brazil may channel international public finance towards climate change via multilateral and other development banks, this has not been included in this report.
### Financial Policy and Regulation

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Instruments</th>
<th>Objective</th>
<th>Under Discussion/implementation</th>
<th>None identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Financial Principles</td>
<td>n/a</td>
<td>This indicates political will and awareness of climate change impacts, showing where there is a general discussion about the need for aligning prudential and climate change objectives in the national financial architecture.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Between 2008 and 2011, the Central Bank of Brazil (BCB) issued a series of industry-specific green banking regulations to prioritise investment in certain sectors. It was also the world’s first banking regulator to request banks to monitor environmental risks as part of the implementation of Basel III’s Internal Review for Capital Adequacy. In 2014, the BCB published a mandatory resolution on environmental, social and governance (ESG) standards for financial institutions, strengthening risk management and requiring private banks to implement ESG policies. The private insurance regulator (SUSEP), responsible for the supervision of insurance, private pension funds and capital markets, called for implementation of the TCFD in 2017. In 2018, the BCB published a resolution enhancing the obligation to disclose the integration of ESG consideration in investment policies with a requirement to integrate ESG issues in regular risk management processes, whenever possible. A member of the Sustainable Banking Network (SBN) since 2012, the BCB also recently joined also the NGFS.

### Nationally Determined Contribution (NDC): Finance

<table>
<thead>
<tr>
<th>Conditionality</th>
<th>Further actions beyond the current NDC are conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment needs</td>
<td>Not specified</td>
</tr>
<tr>
<td>Actions</td>
<td>Not mentioned</td>
</tr>
<tr>
<td>International market mechanisms</td>
<td>Brazil reserves its position in relation to the possible use of any market mechanisms</td>
</tr>
</tbody>
</table>
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

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.

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 ‘fair-share’ ranges, as 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.

<table>
<thead>
<tr>
<th>Energy</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Frontrunner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable energy in power sector</td>
<td>No policy to increase the share of renewables</td>
<td>Some policies</td>
<td>Policies and longer-term strategy/target to significantly increase the share of renewables</td>
<td>Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place</td>
</tr>
<tr>
<td>Coal phase-out in power sector</td>
<td>No target or policy in place for reducing coal</td>
<td>Some policies</td>
<td>Policies + coal phase-out decided</td>
<td>Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)</td>
</tr>
<tr>
<td>Phase out fossil fuel cars</td>
<td>No policy for reducing emissions from light-duty vehicles</td>
<td>Some policies</td>
<td>Policies + national target to phase out fossil fuel light-duty vehicles</td>
<td>Policies + ban on new fossil-based light-duty vehicles by 2035 worldwide</td>
</tr>
<tr>
<td>Phase out fossil fuel heavy-duty vehicles</td>
<td>No policy</td>
<td>Some policies</td>
<td>Policies + strategy to reduce absolute emissions from freight transport</td>
<td>Policies + innovation strategy to phase out emissions from freight transport by 2050</td>
</tr>
<tr>
<td>Modal shift in (ground) transport</td>
<td>No policies</td>
<td>Some policies</td>
<td>Policies + longer-term strategy</td>
<td>Policies + longer-term strategy consistent with 1.5°C pathway</td>
</tr>
<tr>
<td>Near zero energy new buildings</td>
<td>No policies</td>
<td>Some policies</td>
<td>Policies + national strategy for near zero energy new buildings</td>
<td>Policies + national strategy for all new buildings to be near zero energy by 2050 (OECD countries) or 2025 (non-OECD countries)</td>
</tr>
<tr>
<td>Energy efficiency in Industry</td>
<td>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</td>
<td>80-89% average score on the policy-related metrics in the ACEEE’s International Energy Efficiency Scorecard</td>
<td>Over 90% average score on the policy-related metrics in the ACEEE’s International Energy Efficiency Scorecard</td>
<td>Over 90% average score on the policy-related metrics in the ACEEE’s International Energy Efficiency Scorecard</td>
</tr>
<tr>
<td>Retrofitting existing buildings</td>
<td>No policies</td>
<td>Some policies</td>
<td>Policies + retrofitting strategy</td>
<td>Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020</td>
</tr>
<tr>
<td>Net-zero deforestation</td>
<td>No policy or incentive to reduce deforestation in place</td>
<td>Some policies</td>
<td>Policies + national target for reaching net zero deforestation</td>
<td>Policies + national target for reaching zero deforestation by 2020s or for increasing forest cover age</td>
</tr>
</tbody>
</table>

BIBLIOGRAPHY


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