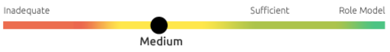
CLIMATE ACTION TRACKER

Brazil

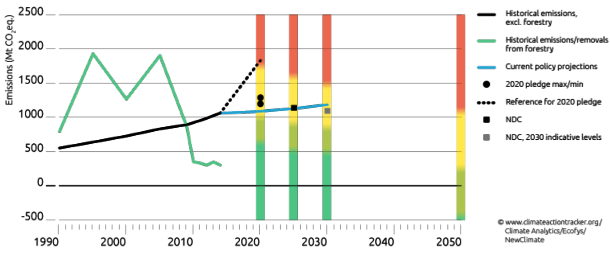
History: 2017 2016 2015 2014 2013 2012 2011

Page last updated: 2nd November 2016

Rating



Basic view + NDC



Note: Hover over the coloured bars for a pop-up with the fair emissions range per effort sharing category. More information here.

Assessment

Brazil, as home of the largest part of the Amazon rainforest, and one of the world's ten largest emitters, has huge importance for the global climate situation. Yet according to our analysis, Brazil's emissions reduction targets are at the least ambitious end of a fair contribution to global mitigation, and are not consistent with meeting the Paris Agreement's long-term temperature goal unless other countries make much deeper reductions and comparably greater effort. With currently implemented measures, Brazil is set to meet its 2025 target, but would need to make more effort to reach the target emissions levels for 2030. Our analysis shows that due to increasing energy demand and an implementation lag that affects climate policy in Brazil, emissions in most sectors are expected to continue rising until at least 2030.

Brazil's Nationally Determined Contribution (NDC) includes a target to limit its GHG emissions including land use, land use change and forestry (LULUCF) to 1.3 $GtCO_2e$ by 2025 and 1.2 $GtCO_2e$ (GWP-100; IPCC AR5) by 2030, equivalent to a 37% and 43% reduction below 2005 levels (Government of Brazil, 2015) [1]. However, taking into account that land use emissions have already decreased steeply since 2005, mainly thanks to policies to fight deforestation, and are projected to continue decreasing in the coming decades, the NDC targets effectively allow Brazil to increase its emissions from fossil fuels and industry (GHG excluding LULUCF) by 37% by 2025 and 32% by 2030 above 2005 levels (equivalent to 107% and 99% above 1990 levels).

A positive aspect of Brazil's NDC is that it puts forward an absolute target i.e. a target relative to emissions in a historical year, as opposed to reductions below business-as-usual, or an intensity target. Compared to other large developing country emitters, the Brazilian target actually constrains emissions. Moreover, in the NDC, Brazil sets out a clear plan to achieve its target, including the goal of reaching a 45% share of renewables in its primary energy mix by 2030.

Taking into account the most recent data increased and accelerated mitigation action in energy and industry sectors - including a reversal of present plans to expand fossil fuel energy sources - are needed to meet the 2030 target emissions levels, let alone the improved target that would be needed for Brazil to be in line with the Paris Agreement goals. Under our current policy scenario, the only sector that will see a constant reduction in emissions from 2005 levels will be the LULUCF sector, which is expected to achieve a 95% emissions reduction compared to base year already by 2025.

Footnotes

[1] Brazil's NDC target is based on the 2005 emissions level reported in the Second National Communication to the UNFCCC (2.1 $GtCO_2e$; GWP-100; IPCC AR5). However in the latest GHG Inventory submission the estimates for emissions in the year 2005 are significantly higher (2.7 $GtCO_2e$; GWP-100; IPCC SAR). Based on the new inventory, Brazil's targets translate respectively to a 55% and 59% reduction below 2005 levels in 2025 and 2030.

Pledges and targets

Paris Agreement

On 28 September 2015 Brazil announced its INDC (Intended Nationally Determined Contribution) with an emissions target of 1.3 $GtCO_2e$ by 2025 and 1.2 $GtCO_2e$ by 2030, equivalent to 37% and 43% below 2005 emissions levels including LULUCF (Government of Brazil, 2015). Additionally, the document lists sectoral measures to achieve these targets. Brazil officially ratified the Agreement on September 21, 2016, turning the INDC into a NDC.

The base year for the NDC targets (2005) was a year with particularly high emissions from deforestation, followed by steep LULUCF emissions reduction reaching 93% below 2005 levels in 2012 due to successful policies to fight deforestation. This means that the NDC targets translate to a decrease in emissions incl. LULUCF below 2012 levels of only 4% in 2025 and 13% in 2030.

The CAT assesses emissions excluding LULUCF, and shows emissions from LULUCF separately. We rate governments only based on emissions excluding the LULUCF sector. Taking into account the decreasing LULUCF emissions projected for the coming decades in Brazil (REDD and Policy Assessment Centre, 2015), the CAT estimates that the NDC targets translate to an increase in non-LULUCF emissions above 2005 levels of 37% in 2025 and 32% in 2030 (equivalent to 107% and 99% above 1990 levels).

Copenhagen pledge	
2020 target	36.1% to 38.9% below BAU including LULUCF [117- 134% above 1990 excl. LULUCF]
Paris Agreement target	
Ratified	Yes
2030 target	1.3 $GtCO_2e$ by 2025 incl. LULUCF [107% above 1990 levels -GWP100; IPCC SAR- excl. LULUCF]
2030 "indicative" target	1.2 $GtCO_2e$ by 2030 incl. LULUCF [99% above 1990 levels - GWP100; IPCC SAR - excl. LULUCF]
Coverage	Economy-wide, incl. LULUCF
LULUCF	• Zero illegal deforestation in the Brazilian Amazonia by 2030. • Restoring and reforesting 12 million ha of forests by 2030. • Enhancing sustainable native forest management.
Long term goal(s)	
Strive for a transition towards energy systems based on renewable sources and decarbonisation of the global economy by the end of the century.	

Box 1: New National Inventory data and the INDC targets.

On April 2016, the Brazilian government submitted a new GHG Inventory with revised historical data up to 2010 (Ministry of Science Technology and Innovation, 2016b), which includes significant changes in historic data for the LULUCF sector compared with the last available data of the Second Biennial Report of Brazil to the UNFCCC (Ministry of Science and Technology of Brazil, 2014). More specifically, emissions from the LULUCF sector in 2005 increased 61% in the new inventory (from 1.2 $GtCO_2$ to 1.9 $GtCO_2$) and total 2005 emissions (incl. LULUCF) increased 34% (from 2 $GtCO_2$ to 2.7 $GtCO_2$).

Most of the change in emissions between the two inventories arises from methodology changes to calculate emissions and removals from Land Use and Forestry. The main LULUCF methodology changes were the update of the biomass carbon maps of different vegetation types in each biome and the emissions factors used to estimate emissions from deforestation in various vegetation types, which allowed for a more accurate assessment (Ministério da Ciência e Tecnologia, 2015). Methodology improvements allowed resolving inconsistencies where there was discontinuity of information and to correct for misinterpretations done in the previous inventory; therefore they constitute an overall improvement in emissions data for the country.

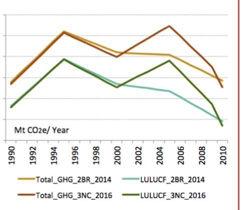


Figure 1- Total GHG and LULUCF emissions. Comparison Second Biennial Report with Third National Communication.

As a result of the improved historical data, the target emissions levels mentioned in the INDC (1.3 $GtCO_2$ by 2025 and 1.2 $GtCO_2$ by 2030) represent a 55% and 59% reduction below 2005 levels (GWP-100; IPCC SAR) instead of the 37% and 43% reduction announced. However, as the target emissions levels for 2025 and 2030 did not change and the percentage increase is only a product of revised base-year emissions, this adjustment does not change CAT's rating of Brazil's NDC.

Copenhagen Pledge for 2020

Brazil was one of the first major developing countries to put forward an emissions reduction target with its Copenhagen pledge in January 2010. It committed to reducing its emissions incl. LULUCF by between 36.1% and 38.9% in 2020, compared to BAU emissions. This target is equivalent to a 117–134% increase on 1990 levels excl. LULUCF. The target was turned into national law in December 2010, which contained no conditionality on international funding, making it more stringent than Brazil's international target (Presidência da República, 2010).

However, there was also a difference in the proposed BAU—it rose. Whereas Brazil's Copenhagen Pledge suggested a BAU level of 2.7 $GtCO_2e/a$ by 2020, its national law includes a BAU level of 3.2 $GtCO_2e/a$ with the same percentage reduction. That translated into a 20% increase of the emissions level in 2020 compared to the Copenhagen Pledge.

To achieve its pledge, Brazil has proposed a series of measures and policies targeting the LULUCF sector, and notably the government has committed to reducing annual deforestation rates by 80% below average levels 1996–2005 by 2020. By 2012, Brazil already achieved most of those reductions, which has led to an abrupt and significant decrease in LULUCF emissions of about 93% from 2005–2012.

Fair Share

We rate Brazil's NDC for 2025 and 2030 as "medium," meaning these targets are at the least ambitious end of what would be a fair contribution(Climate Action Tracker, 2015). This means the commitments are not consistent with limiting warming to "below 2°C", let alone with the Paris Agreement's stronger 1.5°C limit, unless other countries make much deeper reductions and comparably greater effort. For the CAT to give Brazil a "sufficient" rating, the emissions (excl. LULUCF) increase would need to come down to around 11%, instead of 37%, above 2005 levels (GWP-100; IPCC SAR) by 2025.

With emissions at a level of around 1.1 $GtCO_2e$, the target for 2025 is in line with the effort sharing approaches that focus on equal cumulative per capita emissions and equal per capita emissions. According to the approaches based on responsibility and capability, Brazil's emissions reduction target is not ambitious enough to be considered fair. The emissions reduction target could therefore be strengthened to reflect Brazil's potential to increase energy efficiency and develop renewable sources of energy.

Current policy projections

Currently implemented policies are estimated to lead to total emissions (excluding LULUCF) of 1.1 $GtCO_2e$ in 2025 and 1.2 Gt CO_2e by 2030 (respectively, 36% and 43% above 2005 levels and 105% and 115% above 1990 levels). According to our assessment, Brazil is on track to meet its 2025 NDC target with most of the reductions in emissions coming from the LULUCF sector. With currently implemented policies, some additional effort is needed to meet the 2030 target, and efforts to increase the implementation pace and to align recent policy developments in the energy sector with long-term emissions targets are still needed. Emissions from the energy and industrial sectors increased by 17% in the period of 2005–2012, and are projected to grow significantly over the coming decades, mainly as a result of increased primary energy demand. It is possible that the current economic and political turmoil could result in lower economic growth than projected and GHG emissions growing at a slower pace than in the last decade.

Land Use and Land Use Change sector

Historically, the land use and forestry sector has been by far the largest source of GHG emissions in Brazil. This picture has changed significantly and positively over the past decade: from 2005–2012, emissions from the LULUCF sector decreased by 84%. This is the result of effective policies implemented over the last decade to fight deforestation that have—in absolute terms—reduced the annual deforested area by roughly 80% from 27,772 km^2 in 2004 to 5,891 km^2 in 2013 (Ministry of Science Technology and Innovation, 2016a). According to the most recent projections, LULUCF emissions will continue declining at least until 2030 to reach levels close to zero by 2040 (REDD and Policy Assessment Centre, 2015).

Keeping in mind the significant share of emissions from LULUCF for the country (around 70% of total emissions in 2005), Brazil mentioned in its NDC a number of measures to continue the declining emissions trend in this sector. The sectoral goals for LULUCF include reducing illegal deforestation to zero, compensating for GHGs emissions from legal suppression of vegetation, reforesting 12 million hectares of forests, and restoring an additional 15 million hectares of degraded pasturelands by 2030. Strengthening and enforcing existing measures should achieve these goals.

The central pieces of action in the LULUCF sector are the National Forest Code, the Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm) and the Cerrado (PPCerrado), that have proved highly successful in reducing emissions from the LULUCF sector by about 84% 2005–2012, resulting from a decrease in deforestation of about 80% over the same period. While this is a very positive development, this decrease has not been linear: for example, the deforested area in 2013 was 29% higher than in 2012. This shows that continuous efforts are crucial to maintain the lower levels of deforestation we see today, and additional policies may be needed if the government wants to achieve even lower levels (Observatorio do Clima, 2016).

Energy supply sector

In a joint declaration with the US President Obama on 30 June 2015, Brazil's then-President, Dilma Rousseff, announced an increase of non-hydro renewable energy sources in the total energy mix to between 28% and 33% by 2030 (The White House, 2015). This target was confirmed in the NDC, where an overall 45% renewable energy target, including hydropower, was announced. Taking into account that Brazil's energy market is expanding, and electricity generation is projected to increase by more than 50% between 2012 and 2030 (IEA, 2015), the renewable energy target included in the NDC is an important statement, as it would contribute to an improvement in Brazil's electricity generation carbon intensity.

However, plans to decarbonise the Brazilian power sector appear to be contradicted by recent policy developments. In fact, the share of fossil fuels in the Brazilian energy matrix is increasing and the share of renewable energy sources in the energy supply has been declining - from around 50% in the 1990s to only 39% in 2014 (Observatorio do Clima, 2016). Additionally, the Ministry of Mines and Energy has announced the Ten-year Plan for Energy Expansion (PDE, 2024) that contemplates an increase in the share of investments in fossil energy sources, which would reach 70.6% of total energy investments in 2024 (Ministério de Minas e Energia, 2015). These recent developments may ultimately limit the options for long-term deep decarbonisation of the Brazilian economy as a consequence of unnecessarily locking in a high level of carbon-intensive energy infrastructure.

Unless additional policies are put in place, emissions in the energy sector will continue to rise in the coming decades, in tandem with the growing national energy market (IEA, 2015). There are numerous options for mitigation policies in the energy supply sector, such as increasing further energy efficiency or introducing incentives for demand management. More effective utilisation of flexible renewables, especially biomass, as well as the development of a power grid to take advantage of the complementarity of different sources of energy, can also be used to reduce Brazil's CO_2 emissions.

Other sectors

The country has enacted sectoral plans to reduce emissions in other sectors of the economy, including the Mitigation and Adaptation to Climate Change for a Low-Carbon Emission Agriculture (ABC Plan), the Steel Industry Plan, the Low Carbon Emission Economy in the Manufacturing Industry Plan, The Sectoral Transport and Urban Mobility Plan and the Low-Carbon Emission Mining Plan. Most of those policies and instruments, however, are still not part of national development planning and decisions on climate change instruments often are disjointed from each other at different levels of government due to a still not clearly established climate governance structure in the country (Observatorio do Clima, 2016).

Partially due to the implementation lag that affects climate policy in Brazil, emissions in all sectors (except for LULUCF) are expected to continue rising until at least 2030. With currently implemented measures Brazil is set to meet only its (I)NDC Renewable Energy target, however more effort would be needed to reach the target emissions levels mentioned in the (I)NDC. Taking into account the most recently projected LULUCF emissions levels, we estimate that increased and accelerated mitigation action in the other sectors would be necessary for the country to meet its NDC target emissions levels.

Assumptions

NDC

In the absence of a clear split between LULUCF and non-LULUCF emissions, the CAT estimates the NDC for Brazil on emissions excl. LULUCF as follows: We calculate the 37% and 43% reduction below 2005 levels suggested in the NDC (including LULUCF) and the subtract the most recently projected LULUCF values (REDD and Policy Assessment Centre, 2015) from these levels, after a harmonisation with historical data, in order to estimate the emissions reduction target excluding LULUCF, which we subsequently rate.

2020 Pledge

Future BAU emissions were taken from the levels provided in the Decree No. 7390, of 2010 (Presidência da República, 2010). The pledge excluding LULUCF was calculated by applying the target to total emissions and subtracting LULUCF levels in 2020 consistent with the achievement of the targets in the deforestation sector, which were calculated making use of the information provided in the Decree No. 7390 for the LULUCF sector.

Current Policy Projections

The current trend projections are based on the World Energy Outlook 2015 Current Policy scenario projections for CO_2 only (IEA, 2015), additionally we have estimated the impact of the 45% renewable energy target assuming renewables replace all fossil fuels proportionally to each fuel's share in the energy mix and subtracted this mitigation potential from the WEO scenario. For non-CO_2 emissions we base our estimates on the US EPA projections until 2030 (US EPA, 2012). Historical data until 2010 is based on the latest inventory data submitted to the UNFCCC (Ministry of Science Technology and Innovation, 2016b) and until 2014 from Observatório do Clima (Observatorio do Clima, 2016). For the LULUCF pathway the quantification is based on the latest national projections (REDD and Policy Assessment Centre, 2015), after harmonisation with historic data.

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