Observatório do Clima

Our fair share

Policies, measures and actions for an ambitious low-carbon development target for Brazil

SUMMARY:

Substantial cuts to worldwide CO_2 emissions will be required to keep global warming below 2°C in relation to pre-industrial levels, a target established by the member countries of the United Nations Framework Convention on Climate Change (UNFCCC) in its 15th Conference of the Parties and formalized in the 16th Conference of the Parties[1].

Despite being a developing country, Brazil is one of the world's top ten greenhouse gas emitters[2], and studies based on equal division of the carbon budget available to humanity have indicated that Brazil's contribution to mitigating the situation by 2030, given its responsibility, national capacity and proportion of the global population, should be to limit its emissions to around 1 Gt (one billion tons) of CO_2 equivalent[3,4,5].

This document lists policies, measures and actions that can take Brazil down a low-carbon development route, with economic opportunities, compatible with a 1 Gt limit for CO_2e emissions in 2030, and also provide the population with co-benefits.

To achieve this, this route proposes to eliminate emissions from land-use changes (deforestation) and limit energy emissions to 617 million tCO_2e, industrial process emissions to 123 million tCO_2e, agricultural sector emissions to 280 million tCO_2e and waste emissions to 60 million tCO_2e, in addition to removing at least 80 million tCO_2e from the atmosphere by regenerating degraded areas.

INTRODUCTION:

In December 2015, representatives of over 190 countries will meet in Paris to establish a new global climate protection regime. The main aim of the COP21 (21st Conference of the Parties of the United Nations Framework Convention on Climate Change) is to produce a global agreement with targets for mitigating emissions and adapting to climate changes that are adopted by all developed and developing countries around the world.

The countries' efforts need to produce a reduction in greenhouse gas emissions that can keep global warming this century below 2°C, a limit beyond which the consequences of climate change would be dangerous for humanity.

According to the IPCC, the UN climate panel, in order to achieve a greater than 50% chance of preventing the 2°C threshold from being exceeded, greenhouse gas emissions will need to be stabilized by the end of the century to 450 parts per million. This will require emission cuts of at least 40% to 70% by mid-century. In order to achieve a greater than 66% chance of temperature stabilization, emissions between 2012 and the end of the century must be limited to 1,000 $GtCO_2e$, which means, considering current emission levels and a linear drop, reaching carbon neutrality by 2050 – in other words, ensuring that remaining emissions are offset by carbon sequestration by ecosystems or removal technologies.

After the limited success of the Kyoto Protocol, which distributed top-down emission-cutting obligations to a group of countries[6], and the failure of COP15 to produce the first global agreement backed by law that included contributions from large developing countries, such as Brazil, India and China[7], UNFCCC members have adopted a different approach for the Paris conference: each nation will submit their own emission-reducing proposal to the UN by 1st October this year, which must include a target for the immediate post-2020 horizon (2025 or 2030) and a long-term vision for 2050. National commitments for the new agreement are known as INDCs, or Intended Nationally Determined Contributions. At the end of the year, INDCs will be assessed by the Climate Convention to determine their joint degree of ambition – how close or far they are from the 2°C target.

INDCs must include certain basic elements to allow comparison between commitments: they must outline the country's target, expressed in numbers; the nature of the target (e.g. whether it is a percentage reduction in relation to a base year, or a deviation from what emissions would be if nothing were done, or even an overall reduction in carbon emissions per unit of GDP); or the scope of the emissions included (i.e. whether the target corresponds to the entire economy or just to certain sectors); the long-term vision (where the country plans to be with its emissions in 2050); and considerations regarding the fairness and equity of their contribution (i.e. why the proposing country thinks their target is a fitting contribution to the effort of reaching the 2°C goal).

Brazil is considered a developing country under UNFCCC criteria. This means that, unlike wealthy countries, it is free to propose relative emission-cutting targets - whether expressed as a deviation from business as usual or as a reduction in the carbon intensity of GDP. However, the Climate Observatory believes that the country's fair and equitable contribution should be expressed as an emissions ceiling of one billion tons of CO_2 equivalent in 2030, which equals an overall reduction of 35% in relation to 2010 emissions, the year Brazil began implementing its National Climate Change Policy.

The target is fair and equitable when the division of carbon space available to humanity is considered. According to the IPCC, in order to stabilize climate, total greenhouse gas emissions from 2011 to the end of the century must not exceed 650 billion tons of CO_2 equivalent. There are various possible ways of dividing this "budget" between countries – considering, for example, their historic responsibility, population and emissions per capita[8].

Brazil is one of the top ten CO_2 emitters on the planet. Furthermore, due to emissions caused by uncontrolled deforestation in the second half of the 20th century, it can also be considered one of the five countries that most contributed to today's verifiable increase in global temperature[9]. Our emissions per capita have historically been above the world average – by 2005, due to deforestation, they were equal to the emissions of developed countries. Taking the proportion of the world's population in Brazil into consideration, different analyses of equitable allocation of mitigation efforts, which consider the global emissions trajectory to 2°C, indicate that Brazil's level of emissions in 2030 should not exceed 1GtCO_2e. The country can aim for carbon neutrality in 2050, with emissions from the energy, industry, waste and agricultural sectors limited to 500 million tons of CO_2 equivalent, and the removal of the same amount of carbon by growing forests and good land-use practices.

The 2030 target is not only fair, it is also perfectly achievable with the dissemination of technologies already widely used in the country and with the implementation of public policies that will lead Brazil to a low-carbon development model.

As indicated by various studies (see, for example, refs. 8, 10), mitigation offers economic opportunities to most sectors – therefore, cutting emissions can bring economic advantages. There are also various co-benefits associated with mitigation and adaptation actions, such as improved health and quality of life in cities through use of clean transportation and energy, greater access to water and greater efficiency in industrial processes.

KEY MEASURES FOR ACHIEVING THE 2030 TARGET

Below, we outline a set of policies, measures and actions for the areas that most contribute to emissions to take Brazil's emissions to 1 $GtCO_2e$ in 2030:

LAND-USE CHANGES (DEFORESTATION AND FOREST RECOVERY)

- Deforestation should be eliminated in all Brazilian biomes. This means no further loss of native vegetation and no further loss of forest cover in general.
- We should regenerate 14 million hectares of currently degraded or deforested permanent preservation and legal reserve areas, at a rate of one million hectares per year.

AGRICULTURE

- Beef cattle herds alone will grow to over 260 million heads (MAPA – Ministry of Agriculture), farm land will expand to around 20 million hectares and planted forest areas will double to 15 million hectares (IBÁ - Brazilian Forestry Industry). Assuming deforestation is zero in 2030, this agricultural expansion must take place in currently degraded pastures and high productivity must be linked to low GHG emissions and high carbon sequestration.
- In order to support expected livestock growth (at a capacity of 2 heads/ha) it will be necessary to recover 18 million hectares of degraded pastures (carbon emitters), transforming them into optimized management areas (carbon removers for at least 20 years) and implement 3.5 million hectares of integrated crop-livestock-forest systems (ICLF).
- Other measures that will reduce cattle herd emissions include: improving the quality of pastures, animal supplementation and reducing slaughter age.
- 70% of grain production areas (83 million hectares in 2030) should adopt the no-till system and prioritize use of varieties and cultivars that ensure biological nitrogen fixation.
- All irrigated rice fields should adopt early planting techniques and, if necessary, increase rice production; the same should be done in rain-fed areas.
- The volume of animal waste treatment should double.
- All funding lines of the 'Plano Safra' (Farming Plan) should consider low carbon emission practices to make them accessible.

ELECTRICITY

Emissions from electricity generation in 2030 would remain near current levels, even with double the installed capacity. To achieve this, it is necessary to promote wind, solar and

biomass electricity generation and limit fossil fuel generation. Additional targets would also need to be established to ensure energy efficiency.

- In 2030, electricity generation levels should be 1,020 TWh/year.
- More aggressive energy efficiency targets should be adopted to reduce consumption by an additional 90 TWh/year over that determined in the 2050 Energy Demand Study produced by EPE (Energy Research Company).
- Generating capacity should total around 265 GW of installed capacity, relying primarily on an increase in electricity generated by wind farms, solar plants and biomass, which should total 106 GW of installed capacity.
- With the proposed power facilities, it would not be necessary to build new hydroelectric power plants in the Amazon - due to the social and environmental impact of such constructions - or to build new nuclear power plants in addition to Angra 3.
- The expansion of coal, diesel and fuel oil plants should stop after 2015.

TRANSPORT AND FUEL

- **A modal shift in some travel from individual to public transport:** The National Urban Mobility Policy, instituted by Law 12.587/2012, supports the proposal of a set of projects to expand the public transport service and encourages a modal shift from individual transport to collective or non-motorized transport:

    - Expansion of the medium and high capacity public transport service (BRTs, LRVs, subways and trains) in metropolitan areas. This would require the establishment, by state and federal governments, of permanent and predictable sources of funding for urban mobility projects, either through non-refundable resources or loans.
    - Implementation of exclusive bus lanes in cities with a population over 500,000 inhabitants, providing benefits such as greater operating speeds, reduced journey times, reduced fuel consumption and reduced emissions of local pollutants and GHGs. This would be a low-cost incentive and is achievable by all city councils.
    - Incorporation of bicycles into the urban mobility system by implementing cycle paths, bicycle racks and other support infrastructure as part of the public transport network.
    - Discourage use of individual motorized transport in metropolitan areas through use of regulatory and economic instruments, such as parking management, alternating number plate systems, restricted access and congestion charging.

- **Reduce use of fossil fuels in urban mobility systems**

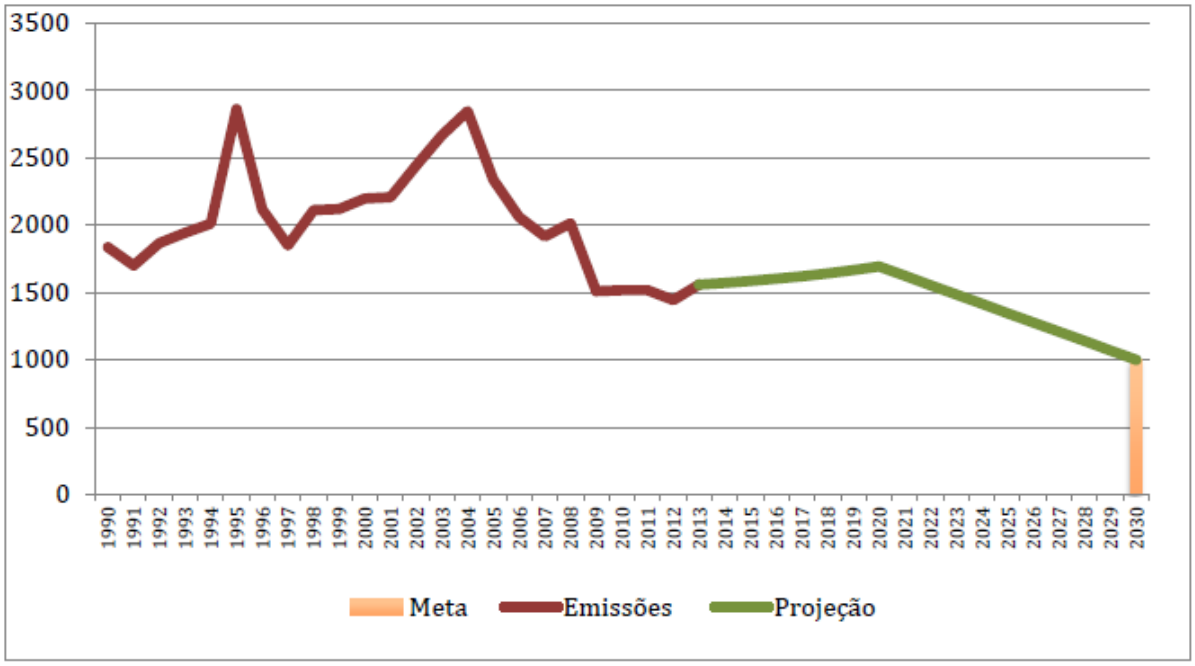
    - By 2030, diesel fuel should no longer be used in urban buses in metropolitan areas, ideally in favor of greater electricity use. This will require government efforts to establish new sources of funding to operate public transport and new compensation models for operators, ensuring that users do not incur additional costs.
    - Greater use of cleaner sources of energy - ethanol and batteries - in cars. Government incentives/disincentives to increase use of ethanol in the fuel consumption of flexible-fuel vehicles to 60% by 2030.
    - Increase blends of biodiesel in petrodiesel to 20% (B20).
    - Effective implementation and ongoing updates to the Inovar-Auto Program (Strategic Agenda of the Automotive Sector of the 'Plano Brasil Maior' [Greater Brazil Plan]) for light vehicles, so that the energy efficiency of vehicles sold in Brazil is in line with international best practices.

- **Road freight transport:** Adopt a set of measures intended to reduce the use of fossil fuels by trucks and improve the energy efficiency of trucks:
    - Increase blends of biodiesel in petrodiesel to 20% (B20).
    - Include heavy-duty diesel vehicles in the Inovar-Auto Program (Strategic Agenda of the Automotive Sector of the 'Plano Brasil Maior'), establishing mandatory targets as of 2020, so that the energy efficiency of trucks sold in Brazil is in line with international best practices.

We have not calculated potential emission reductions from the expansion of railway and waterway infrastructure, or the implementation of integrated logistics platforms intended to encourage, whenever technically possible, the transfer of cargo from roads to railways and waterways.

GRAPH

GHG emissions ($MtCO_2e$) between 1990 and 2013 and projected trajectory for achieving the 1 $GtCO_2e$ target in 2030.



Meta = Target
Emissões = Emissions
Projeção = Projection

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