



FEDERATIVE REPUBLIC OF BRAZIL
INTENDED NATIONALLY DETERMINED CONTRIBUTION
TOWARDS ACHIEVING THE OBJECTIVE OF THE
UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Pursuant to decisions 1/CP.19 and 1/CP.20, the Government of the Federative Republic of Brazil is pleased to communicate to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) its intended Nationally Determined Contribution (iNDC) in the context of the negotiations of a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties.

This intended contribution is communicated under the assumption of the adoption of a universal, legally binding instrument that fully respects the principles and provisions of the UNFCCC, in particular the principle of common but differentiated responsibilities and respective capabilities. It is "intended" in the sense that it might be adjusted, as appropriate, before the ratification, acceptance or approval of the Paris agreement in light of provisions yet to be agreed under the ADP mandate.

All policies, measures and actions to implement Brazil's iNDC are carried out under the National Policy on Climate Change (Law 12,187/2009), the Law on the Protection of Native Forests (Law 12,651/2012, hereinafter referred as Forest Code), the Law on the National System of Conservation Units (Law 9,985/2000), related legislation, instruments and planning processes. The Government of Brazil is committed to implementing its iNDC with full respect to human rights, in particular rights of vulnerable communities, indigenous populations, traditional communities and workers in sectors affected by relevant policies and plans, while promoting gender-responsive measures.

Brazil's iNDC has a broad scope including mitigation, adaptation and means of implementation, consistent with the contributions' purpose to achieve the ultimate objective of the Convention, pursuant to decision 1/CP.20, paragraph 9 (Lima Call for Climate Action).

MITIGATION:

Contribution: Brazil intends to commit to reduce greenhouse gas emissions by 37% below 2005 levels in 2025.

Subsequent indicative contribution: reduce greenhouse gas emissions by 43% below 2005 levels in 2030.

Type: absolute target in relation to a base year.

Coverage: 100% of the territory, economy-wide, including CO₂, CH₄, N₂O, perfluorocarbons, hydrofluorocarbons and SF₆.

Reference point: 2005.

Timeframe: single-year target for 2025; indicative values for 2030 for reference purposes only.

Metric: 100 year Global Warming Potential (GWP-100), using IPCC AR5 values.

Methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals: inventory based approach for estimating and accounting anthropogenic greenhouse gas emissions and, as appropriate, removals in accordance with the applicable IPCC guidelines.

This INDC takes into account the role of conservation units and indigenous lands¹ as forest managed areas, in accordance with the applicable IPCC guidelines on the estimation of emission removals.²

Use of markets: Brazil reserves its position in relation to the possible use of any market mechanisms that may be established under the Paris agreement.

Brazil emphasizes that any transfer of units resulting from mitigation outcomes achieved in the Brazilian territory will be subject to prior and formal consent by the Federal Government.

Brazil will not recognize the use by other Parties of any units resulting from mitigation outcomes achieved in the Brazilian territory that have been acquired through any mechanism, instrument or arrangement established outside the Convention, its Kyoto Protocol or its Paris agreement.

ADAPTATION UNDERTAKINGS

Brazil considers adaptation to be a fundamental element of the global effort to tackle climate change and its effects. The implementation of policies and measures to adapt to climate change contributes to building resilience of populations, ecosystems, infrastructure and production systems, by reducing vulnerability and through the provision of ecosystem services.

¹ "Conservation units" refers here only to federal and state level protected areas; "indigenous lands" refers to areas at the minimum in the "delimited" stage in the demarcation processes. Even without the role of these managed areas, Brazil's contribution would still represent a reduction of 31% in 2025 and 37% in 2030 in relation to 2005 levels (GWP-100; IPCC AR5).

² Brazil's Initial National Communication, prior to the applicability of current guidelines, did not consider removals from conservation units and indigenous lands. Such an approach, however, would not be compatible with current guidelines, nor comparable to other Parties' contributions. Disregarding these removals compromised the comparability of the Brazilian initial inventory with other Parties' inventories. Brazil's Second National Communication revised this approach.

The social dimension is at the core of Brazil's adaptation strategy, bearing in mind the need to protect vulnerable populations from the negative effects of climate change and enhance resilience. In this context, Brazil is working on the design of new public policies, through its National Adaptation Plan (NAP), in its final elaboration phase. The strong involvement of stakeholders, at all levels, will contribute to the formulation and implementation of Brazil's NAP.

The NAP aims to implement knowledge management systems, to promote research and technology development for adaptation, to develop processes and tools in support of adaptation actions and strategies, at different levels of government. Brazil is a developing country that experienced a fast urbanization process. In this context, risk areas, housing, basic infrastructure, especially in the areas of health, sanitation and transportation, constitute key areas for adaptation policies. The Government of Brazil gives particular attention to the poorest populations, in terms of improving their housing and living conditions, bolstering their capacity to withstand the effects of severe climate events. Brazil already monitors extreme rainfall events for 888 municipalities and has in place an early warning system and action plans to respond to natural disasters.

It should be further noted that Brazil seeks to enhance its national capacity in water security (National Water Security Plan) and conservation and sustainable use of biodiversity (National Strategic Plan for Protected Areas, as well as the implementation of the Forest Code, particularly concerning protected areas).

The National Adaptation Plan will provide a basis for Brazil to strengthen the country's adaptation capacity, assess climate risks and manage vulnerabilities at the national, state and municipal levels. Through the NAP, Brazil's vision for its adaptation undertakings is to integrate, where appropriate, vulnerabilities and climate risk management into public policies and strategies, as well as to enhance the coherence of national and local development strategies with adaptation measures.

MEANS OF IMPLEMENTATION:

Clarification on the extent to which the contribution is dependent upon international support

This iNDC is presented in accordance with the principles and provisions of the Convention, particularly Article 4, paragraphs 1 and 7, and Article 12, paragraphs 1(b) and 4.

Accordingly, the policies, measures and actions to achieve this contribution will be implemented without prejudice to the use of the financial mechanism of the Convention or of any other modalities of international cooperation and support, with a view to enhance effectiveness and/or anticipate implementation. The implementation of Brazil's iNDC is not contingent upon international support, yet it welcomes support from developed countries with a view to generate global benefits.

Additional actions would demand large-scale increase of international support and investment flows, as well as technology development, deployment, diffusion and transfer.

Specifically concerning the forest sector, the implementation of REDD+ activities and the permanence of results achieved require the provision, on a continuous basis, of adequate and predictable results-based payments in accordance with the relevant COP decisions.³

South-South initiatives

Recognizing the complementary role of South-South cooperation, on the basis of solidarity and common sustainable development priorities, Brazil will undertake best efforts to enhance cooperation initiatives with other developing countries, particularly in the areas of: forest monitoring systems; biofuels capacity-building and technology transfer; low carbon and resilient agriculture; restoration and reforestation activities; management of protected areas; increased resilience through social inclusion and protection programmes; capacity building for national communications and other obligations under the Convention, in particular to Portuguese speaking countries.

Brazil invites developed country Parties and relevant international organizations to further support such initiatives.

³ Recalling that the submission of forest reference emission levels and their corresponding REDD+ results are in the context of results-based payments, in accordance with decisions 13/CP.19 and 14/CP.19. See also documents FCCC/TAR/2014/BRA and FCCC/SBI/ICA/2015/TATR.1/BRA.



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ADDITIONAL INFORMATION ON THE INDC FOR CLARIFICATION PURPOSES ONLY

Brazil's iNDC is economy wide and therefore is based on flexible pathways to achieve the 2025 and the 2030 objectives. In that sense, this additional information is meant to be for clarification purposes only.

LONG TERM ASPIRATION

Consistent with the long-term vision of holding the increase in global average temperature below 2°C above pre-industrial levels, Brazil will strive for a transition towards energy systems based on renewable sources and the decarbonization of the global economy by the end of the century, in the context of sustainable development and access to the financial and technological means necessary for this transition.

FAIRNESS AND AMBITION

Brazil is a developing country with several challenges regarding poverty eradication¹, education, public health, employment, housing, infrastructure and energy access. In spite of these challenges, Brazil's current actions in the global effort against climate change represent one of the largest undertakings by any single country to date, having reduced its emissions by 41% (GWP-100; IPCC SAR) in 2012 in relation to 2005 levels.²

Brazil is nevertheless willing to further enhance its contribution towards achieving the objective of the Convention, in the context of sustainable development. Brazil's INDC represents a progression in relation to its current undertakings, in both the type and levels of ambition, while recognizing that emissions will grow to meet social and development needs.

By adopting an economy-wide, absolute mitigation target, Brazil will follow a more stringent modality of contribution, compared to its voluntary actions pre-2020. This contribution is consistent with emission levels of 1.3 GtCO₂e (GWP-100; IPCC AR5) in 2025 and 1.2 GtCO₂e (GWP-100; IPCC AR5) in 2030, corresponding, respectively, to a

¹ Brazil has 15.5 million people living below the poverty line, of which 6.2 million live in extreme poverty (2013). Source: MDS. *Data Social 2.0*. Available at http://aplicacoes.mds.gov.br/sagi-data/METRO/metro.php?p_id=4, accessed on 24 September 2015.

² Source: MCTI. *Estimativas anuais de emissões de gases de efeito estufa no Brasil*. Second edition (2014). Available at http://www.mcti.gov.br/upd_blob/0235/235580.pdf, accessed on 2 September 2015.

reduction of 37% and 43%, based on estimated emission levels of 2.1 GtCO_{2e} (GWP-100; IPCC AR5) in 2005.

In relation to Brazil's existing national voluntary commitment, which aims to achieve gross emissions³ of approximately 2 GtCO_{2e}⁴ in 2020, this iNDC represents an additional gross reduction of approximately 19% in 2025. Furthermore, this contribution is consistent with reductions of 6% in 2025 and 16% in 2030 below 1990 levels (1.4 GtCO_{2e} GWP-100; IPCC AR5).

Brazil's iNDC corresponds to an estimated reduction of 66% in terms of greenhouse gas emissions per unit of GDP (emissions intensity⁵) in 2025 and of 75% in terms of emissions intensity in 2030, both in relation to 2005.⁶

In the period 2004-2012, Brazil's GDP increased by 32%, while emissions dropped 52% (GWP-100; IPCC AR5), delinking economic growth from emission increase over the period, while at the same time Brazil lifted more than 23 million people out of poverty.⁷

Per capita emissions decreased from 14.4 tCO_{2e} (GWP-100; IPCC AR5) in 2004 to an estimated 6.5 tCO_{2e} (GWP-100; IPCC AR5) in 2012. At this 2012 level, Brazil's per capita emissions are already equivalent to what some developed countries have considered fair and ambitious for their average per capita emissions by 2030. Brazil's per capita emissions will decline further to an estimated 6.2 tCO_{2e} (GWP-100; IPCC AR5) in 2025 and 5.4 tCO_{2e} (GWP-100; IPCC AR5) in 2030 under this contribution.

Brazil will reduce greenhouse gas emissions in the context of continued population⁸ and GDP growth, as well as income per capita increase, making therefore this contribution unequivocally very ambitious.

Brazil's mitigation actions to implement this contribution, including its current undertakings, are consistent with the 2°C temperature goal, in light of IPCC scenarios and national circumstances.

According to the IPCC⁹, global scenarios consistent with a *likely* chance to keep temperature change below 2°C relative to pre-industrial levels are characterized, *inter alia*, by:

- i) sustainable use of bioenergy;
- ii) large-scale measures relating to land use change and forests;

³ Not considering removals.

⁴ Value between 1.977 GtCO_{2e} and 2.068 GtCO_{2e}, which represents a reduction between 36.1% and 38.9% below the projected business as usual emissions in 2020, as established by the Decree 7,390/2010 – assuming GWP-100 (IPCC SAR).

⁵ tCO_{2e} (GWP-100; IPCC AR5)/GDP (1000 US\$₂₀₀₅).

⁶ Source of GDP 2005: Ipeadata. Available at <http://www.ipeadata.gov.br>, accessed on 2 September 2015. Source of estimated GDP 2025 and 2030: Empresa de Pesquisa Energética (EPE). *Nota Técnica DEA 12/14: Cenário econômico 2050*. August 2014.

⁷ Sources for emission reductions: MCTI (op.cit.). Source for GDP: Ipeadata (op.cit.). Source for data on poverty: MDS (op.cit.).

⁸ Brazil's population is projected to continue to grow until the 2040's, to approximately 230 million inhabitants. Source: IBGE.

Projeção da População do Brasil por sexo e idade: 2000-2060. August 2013. Available at http://www.ibge.gov.br/home/estatistica/populacao/projecao_da_populacao/2013/default.shtm, accessed on 2 September 2015.

⁹ IPCC, 2014: Summary for Policymakers. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwicker and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. SPM 4.1, pp. 10-12.

- iii) tripling to nearly quadrupling the share of zero- and low-carbon energy supply globally by the year 2050.

In this context, Brazil already has one of the largest and most successful biofuel programs to date, including cogeneration of electricity using biomass. Brazil has achieved the most impressive results of any country in reducing emissions from deforestation, mainly by reducing the deforestation rate in the Brazilian Amazonia by 82% between 2004 and 2014. Brazil's energy mix today consists of 40% of renewables (75% of renewables in its electricity supply), which amounts to three times the world average in renewables, and more than four times the OECD average.¹⁰ This already qualifies Brazil as a low carbon economy.

Brazil intends to adopt further measures that are consistent with the 2°C temperature goal, in particular:

- i) increasing the share of sustainable biofuels in the Brazilian energy mix to approximately 18% by 2030, by expanding biofuel consumption, increasing ethanol supply, including by increasing the share of advanced biofuels (second generation), and increasing the share of biodiesel in the diesel mix;

- ii) in land use change and forests:

- strengthening and enforcing the implementation of the Forest Code, at federal, state and municipal levels;
- strengthening policies and measures with a view to achieve, in the Brazilian Amazonia, zero illegal deforestation by 2030 and compensating for greenhouse gas emissions from legal suppression of vegetation by 2030;
- restoring and reforesting 12 million hectares of forests by 2030, for multiple purposes;
- enhancing sustainable native forest management systems, through georeferencing and tracking systems applicable to native forest management, with a view to curbing illegal and unsustainable practices;

- iii) in the energy sector, achieving 45% of renewables in the energy mix by 2030, including:

- expanding the use of renewable energy sources other than hydropower in the total energy mix to between 28% and 33% by 2030;
- expanding the use of non-fossil fuel energy sources domestically, increasing the share of renewables (other than hydropower) in the power supply to at least 23% by 2030, including by raising the share of wind, biomass and solar;
- achieving 10% efficiency gains in the electricity sector by 2030.

In addition, Brazil also intends to:

- iv) in the agriculture sector, strengthen the Low Carbon Emission Agriculture Program (ABC) as the main strategy for sustainable agriculture development, including by restoring an additional 15 million hectares of

¹⁰ Sources: EPE. *Balanco Energético Nacional*. Available at <https://ben.epe.gov.br/>, accessed on 2 September 2015. OECD (2015), Renewable energy (indicator). doi: 10.1787/aac7c3f1-en. Available at <https://data.oecd.org/energy/renewable-energy.htm>, accessed on 2 September 2015.

degraded pasturelands by 2030 and enhancing 5 million hectares of integrated cropland-livestock-forestry systems (ICLFS) by 2030;

- v) in the industry sector, promote new standards of clean technology and further enhance energy efficiency measures and low carbon infrastructure;
- vi) in the transportation sector, further promote efficiency measures, and improve infrastructure for transport and public transportation in urban areas.

Brazil recognizes the importance of the engagement of local governments and of their efforts in combating climate change.

GLOBAL TEMPERATURE POTENTIAL (GTP) METRIC

Brazil notes that, according to the IPCC, "the most appropriate metric and time horizon will depend on which aspects of climate change are considered most important to a particular application. No single metric can accurately compare all consequences of different emissions, and all have limitations and uncertainties".¹¹ The IPCC also states that the *Global Temperature Potential* (GTP) metric is better suited to target-based policies, while the GWP metric is not directly related to a temperature limit such as the 2°C target.¹² Taking this into account, the GTP metric is the most consistent with contributions to hold the increase in global average temperature below 2°C above pre-industrial levels.

With a view to assuring full transparency, clarity and understanding, Brazil decided to communicate this iNDC using GWP-100 (IPCC AR5), prior to COP-21. Consistent with the 2°C temperature goal and in light of science, Brazil is providing estimates to correspond to GTP-100, with IPCC AR5 values.

Brazil's iNDC is consistent with emission levels of 1.0 GtCO_{2e} (GTP-100; IPCC AR5) in 2025 and 0.8 GtCO_{2e} (GTP-100; IPCC AR5) in 2030. This represents reductions of 43% and 52%, respectively, compared to estimated emission levels of 1.7 GtCO_{2e} (GTP-100; IPCC AR5) in 2005. These reductions translate to reductions of 37% and 43% when expressed in GWP-100 (IPCC AR5).

¹¹ IPCC, 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. SPM D.2 p.15.

¹² See Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. pp. 710-720.

See also Stocker, T.F., D. Qin, G.-K. Plattner, L.V. Alexander, S.K. Allen, N.L. Bindoff, F.-M. Bréon, J.A. Church, U. Cubasch, S. Emori, P. Forster, P. Friedlingstein, N. Gillett, J.M. Gregory, D.L. Hartmann, E. Jansen, B. Kirtman, R. Knutti, K. Krishna Kumar, P. Lemke, J. Marotzke, V. Masson-Delmotte, G.A. Meehl, I.I. Mokhov, S. Piao, V. Ramaswamy, D. Randall, M. Rhein, M. Rojas, C. Sabine, D. Shindell, L.D. Talley, D.G. Vaughan and S.-P. Xie, 2013: Technical Summary. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. pp. 58-59.

The corresponding estimates on greenhouse gas emissions per unit of GDP (emissions intensity¹³) contained in this iNDC, using GTP-100 (IPCC AR5), are as follows:

Compared to 2005, the estimated reduction in terms of emissions intensity in 2025 is 70% and in 2030 is 79%. This iNDC represents a substantial reduction of 48% in terms of emissions intensity in 2030, compared to 2012 estimates. In the period 2004-2012, Brazil's GDP increased by 32%, while emission levels dropped 61% (GTP-100; IPCC AR5).

Finally, adopting GTP-100 (IPCC AR5), estimates of per capita emissions are as follows:

Per capita emissions decreased from 11.9 tCO_{2e} in 2004 to an estimated 4.3 tCO_{2e} in 2012. Brazil's per capita emissions will decline further to an estimated 4.4 tCO_{2e} in 2025 and to 3.7 tCO_{2e} in 2030 under this iNDC.

The contrast between GTP and GWP estimates sheds light on the importance, for analysis and policy making, of recognizing the predominant role of CO₂ emissions in temperature increase, thus avoiding overestimating of the effects of non-CO₂ greenhouse gases with shorter lifetimes in the atmosphere, in particular methane.

HISTORICAL RESPONSIBILITIES AND EQUITY

Most of the current concentration of greenhouse gases in the atmosphere is a result of emissions since the industrial revolution (the post-1750 period). Current generations are bearing the costs of past interference with the global climate system, resulting from human activities and consequent greenhouse gas emissions, primarily by developed countries, during the last two centuries. Similarly, current human activities around the world will affect the climate system over the next centuries.

In order to build a fair and equitable global response to climate change, it is therefore of central importance to link cause (net anthropogenic greenhouse gas emissions) and effect (temperature increase and global climate change).

The global mean surface temperature increase due to anthropogenic greenhouse gas emissions is an objective criterion to measure climate change, serving the purpose of establishing upper limits to prevent dangerous anthropogenic interference with the climate system.

The specific and relative role of each actor's emissions to global climate change can be determined using the global mean surface temperature as an indicator. Each individual actor's contribution to temperature increase should take into consideration differences in terms of starting points, approaches, economic structures, resource bases, the need to maintain sustainable economic growth, available technologies and other individual circumstances.

Establishing the series, in all sectors, of anthropogenic greenhouse gas emissions by sources and removals by sinks allows the estimation of the relative share of total

¹³ tCO_{2e} (GTP-100; IPCC AR5)/GDP (1000 US\$₂₀₀₅).

temperature increase attributable to an individual country. The relative responsibility of a given country in relation to the global mean surface temperature increase can be estimated with a high level of confidence. Hence, the marginal relative contribution to the global average surface temperature increase is a relevant measure to evaluate responsibility in the global effort to limit temperature increase to 2°C compared to pre-industrial levels.

Brazil's mitigation efforts are of a type, scope and scale at least equivalent to the iNDCs of those developed countries most responsible for climate change. In view of the above, and based on available tools, it is evident that Brazil's iNDC, while consistent with its national circumstances and capabilities, is far more ambitious than what would correspond to Brazil's marginal relative responsibility for the global average temperature increase.