

Brazilian contribution to the dialogue on the relationship between land and climate change adaptation related matters

In light of the Decision 1/CP.25

Submission to inform the dialogue on the relationship between land and climate change adaptation related matters, not intervening in other processes under the Convention, the Kyoto Protocol and the Paris Agreement, including those carried out under the Subsidiary Body for Scientific and Technological Advice

The Government of Brazil welcomes the opportunity to submit its views to inform the dialogue referred to in the paragraphs 32–34¹ of **decision 1/CP.25**² and acknowledges the informative work done by the IPCC, and the publication of the special report on Climate Change and Land³.

Brazil fully acknowledges that climate change represents a potential threat to natural ecosystems and to the economic system, which are dependent on natural resources and climatic conditions. Impacts of climate change have the potential to further stress and pose additional risks to livelihoods, biodiversity, human and ecosystems' health, infrastructure and food production systems with consequent impacts on food security and social stability⁴. Climate change is already threatening food security due to increased variability in temperatures, uncertainties in precipitation patterns and increase in the frequency of extreme weather events. Livelihoods are affected, as well as local and national economies.

Brazil firmly believes that a structured long-term strategy, coupled with investment in research, cooperation between countries as well as synergy in the multilateral arena with the process under the UNFCCC is a viable and effective way to prompt a response to the adverse impacts and threats posed by climate change.

Brazil also firmly believes that further action and ambition to support the implementation of national policies are needed. It further recognizes that current discussions about agriculture and land under the UNFCCC have been very useful and created opportunities for countries to share and enhance the global understanding on challenges posed by climate change, as well as the importance to recognize the diversity of local and regional circumstances, environmental and climate conditions. In particular, there are unique specificities of tropical agricultural systems, technologies and practices developed specifically for these climatic conditions and for tropical farmer's needs. In this regard Brazil has been actively participating in all relevant discussions and negotiations on this topic, and has expressed its views via submissions formally presented in 2015 to the UNFCCC in the 42nd session of the SBs⁵; in 2018 in the 48th⁶ and 49th⁷ sessions as well

¹ 32. Also requests the Chair of the Subsidiary Body for Scientific and Technological Advice to convene at its fifty-second session a dialogue on the relationship between land and climate change adaptation related matters, not intervening in other processes under the Convention, the Kyoto Protocol and the Paris Agreement, including those carried out under the Subsidiary Body for Scientific and Technological Advice;

² Document FCCC/CP/2019/13/Add.1, available at https://unfccc.int/sites/default/files/resource/cp2019_13a01_adv.pdf

³ <https://www.ipcc.ch/srccl/>

⁴ IPCC, 2019: Summary for Policymakers. In: *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems* [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.- O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)]. In press.

⁵ https://www4.unfccc.int/sites/SubmissionsStaging/Documents/73_83_130766056108784484-BRAZIL-agriculture-SBSTA-42-mar-2015%20rev.pdf

⁶ <https://www4.unfccc.int/sites/SubmissionsStaging/Documents/201804111110---Submiss%CC3o.Agricultura.Brasil.pdf>

⁷ <https://www4.unfccc.int/sites/SubmissionsStaging/Documents/201811261042---KJWA%20Brazilian%20Submission.pdf>

as in 2019 in the 50th and 51st sessions. Domestically, since 2009, Brazil has been implementing its National Policy for Climate Change (PNMC) and the Adaptation and Low-Carbon Emission Agricultural Plan (ABC Plan) with very significant results that have been synthesized in three BUR submissions, in 2014¹⁰; 2017¹¹ and more recently in 2019¹². Under this understanding Brazil is committed to explore and implement strategies that are relevant and adequate for tropical regions and forge an Integrated Landscape Approach (ILA) in response to the current social, economic, environmental and agronomical challenges, while efforts are ongoing to control and neutralize GHG emissions, particularly from fossil sources.

The ILA provides an opportunity to consider the system at multiple levels and at different scales. In particular the connection among the different elements at spatial and temporal levels are a key aspect to improve resilience as a component of a domestic strategy to adapt and face the adverse impacts of climate change. The result is a landscape where economic activities, such as agriculture, and natural ecosystem's preservation can coexist in a profitable and sustainable manner.

Historically, environmental and agricultural policies and technical development have established the pillars of ILA in Brazil. For instance, the Brazilian Forest Code, first published in 1934, with subsequent revisions and improvements, is a structural tool for farmers to strengthen the sustainability of the production system, enhancing synergies between production and environmental conservation. More recently, policies such as the ABC Plan deal with specific challenges of climate change, increasing the adoption of sustainable production systems, and strengthening the ILA paradigm. The enforcement of a national strategy to face the challenges posed by climate change is paramount to provide and share among farmers, stakeholders, decision makers and the society as whole the understanding that long term investments coupled with research and development and adequate governance has promoted tangible benefits to the agricultural sector in terms of resilience, adaptive capacity, relevant social and economic returns, even under stress, and reduction in the intensity of GHG emissions.

Forest Code: Brazil has long been concerned with issues of natural resources, land and biodiversity conservation, farming and agriculture, ecological restoration, and the health of rural communities and landscapes. Brazil recognized its importance since the beginning of the XX century with the institution of the first Brazilian Forest Code in 1934. Primarily concerned with the preservation of forest stocks, this law already determined that no landowner could harvest more than ¾ of the existing vegetation in its private property. In 1965, a revision of the Forest Code was instituted (Law 4771/65), considering the modernization of agriculture. Aspects such as the conservation, sustainable use and restoration by farmers of 30 meters of riparian forest along rivers up to 10 meters wide (Permanent Preservation Area - APP) were introduced into the national legislation. In addition, the concept of Legal Reserve (RL) was also included. According to this latter provision, in every rural property located in the "Legal Amazon" (rainforest and surrounding ecosystems, covering 61% of the Brazilian territory), 80% of the rainforest areas and 35% of the savannah areas ("Cerrado") have to be reserved. In the rest of the country (39% of the territory), the Legal Reserve provision requires the preservation of natural vegetation in 20% of the area of every rural property.

A subsequent revision of the Brazilian Forest Code in 2012 has reinforced strategies aiming to promote the development and the sustainable use of natural resources in rural properties while still preserving natural ecosystems. Rivers up to 10 meters wide should now have 15 meters of

⁸ <https://www4.unfccc.int/sites/SubmissionsStaging/Documents/201905241220---Brazil-Koronivia.SB50.pdf>

⁹ https://www4.unfccc.int/sites/SubmissionsStaging/Documents/201910021734---Brazil_Koronivia.pdf

¹⁰ <https://unfccc.int/sites/default/files/resource/brbur1.pdf>

¹¹ https://unfccc.int/sites/default/files/resource/BUR2-ING-02032017_final.pdf

¹² https://unfccc.int/sites/default/files/resource/2018-02-28_BRA-BUR3_ENG_FINAL.pdf

protected riparian forest. Small properties should now restore their APPs limited to the percentage of the property's legal reserve. This revision further enhances the concept of ILA providing incentives for the implementation and maintenance of agroforestry, ecotourism and rural tourism activities on the banks of the rivers, provided they were consolidated before 2008. The provisions for legal reserves (RL) remained unchanged: in the “Legal Amazon”, protection of 80% of rainforest and 35% of savannah areas. Elsewhere in the country, 20% of the area of rural properties have to be covered with natural vegetation.

The Forest Code complements the integrated approach to land use, strengthening a landscape perspective of the production system. Understanding that biodiversity conservation is essential to sustainable development, as well as to a sustainable production system, with the help of ecosystems services, the Brazilian Forest Code establishes guidance to the identification of vulnerable and critical areas for preservation, as well as the establishment of the areas dedicated to production. This guidance, and the consequent establishment of APP and RL areas allow for additional benefits, such as protection of water springs, water management, among other ecosystem services. The establishment of protection areas within private properties is a legal requirement, as well as an important indicator of agricultural sustainability, as it is essential to the conservation of local and natural ecosystems, as well the provisions of related services.

Adaptation and Low-Carbon Emission Agricultural Plan (ABC Plan) – In 2010 Brazil established the National Policy for Climate Change (PNMC). This national policy defined, in an integrated perspective, overarching objectives to all the Brazilian economy, that should be complemented by different sectorial plans, in order to consider the complex nature of the actions necessary to tackle the adverse impacts of climate change while setting a long term goal for flexing the Brazilian intensity of GHG emission. The ABC Plan is the sectorial plan developed to address the specific challenges of the Brazilian agricultural sector, and currently the different production systems and related technologies promoted by this sectorial plan are found in more than 40% of the productive areas¹³ of the national territory. This set of practices, developed on the basis of scientific knowledge and in conjunction with rural producers, is today the basis for the productive increase and economic gains of the agricultural sector, also giving producers the ability to guarantee greater resilience to its production systems. Among the most important technologies, it is worth mentioning the No-till System (SPD) and its numerous benefits, such as soil preservation, increased biodiversity, and reduced use of machinery, among others. There are also integrated systems such as the integrated Crop-Livestock-Forest system (ICLF) and its variations, which allow more effective use of the production area of farms. Sustainable intensification of agricultural activity along these lines contributes to the increase of protected areas, while maintaining production and ensuring food security. Integrated systems allow the perception of the effective balance between annual and perennial crops and animal husbandry, aligned with an understanding of the functioning of ecosystems, in order to increase the quality and sustainability of the production process, including an effective control of GHG emissions.

The adoption of these systems, already consolidated in Brazil, has shown that technical efficiency and adequate technology, coordinated with an integrated approach to the landscape can multiply its benefits, with proven productive yield, consequent economic profitability and environmental conservation. The aforementioned systems, and the technologies and practices that compose them, strengthen the resilience of the production system. Experience has also shown that sustainability is a result of the equilibrium among the many elements that compose

¹³ Total agricultural areas (210 million ha) divided by the total areas with sustainable agricultural systems in Brazil (85 million ha)

the agroecosystems, so they have to be considered together, both for implementation and for monitoring.

The protection of the soil, through the SPD, and the integrated systems, as in the ICLF, have allowed not only the maintenance, but the improvement of the productive process in regions of low rainfall index, or during drought events that have reached some regions of the country. This package of conservationist technologies has proven to allow greater moisture retention in the soil, over a longer period of time, and has proven to be an essential strategy for strengthening resilience and the technological basis of the actions promoted by the ABC Plan. In addition to the individual benefit of each technology, the potentiation and combined use of SPD with crop rotation and integration has allowed even more resilience to agricultural production systems in Brazil. Strategies for adapting new cultivars with a larger root system and the maintenance of soil cover are key components of the function of restoring and preserving soil fertility and has proved to allow plants to maintain vigor even in periods of prolonged drought.

The integrated perspective has also been reflected in the increased adoption of Animal Waste Treatment (TDA) strategies. In less than 10 years, Brazil has multiplied by 10 its capacity to transform animal waste into energy and organic compost¹⁴. As a component of the ABC Plan, results regarding TDA have exceeded initial expectations over the last decade. Such positive outcome is the result of a coordinated action, comprising the development of appropriate and accessible technologies, information and training, from an agronomic perspective, together with actions in the energy sector, in particular those that provide solutions for the storage, purchase and distribution of energy produced by biodigesters installed in farms.

The results are manifold, proving the importance of the TDA as it allows for a better use of what would otherwise be discarded, transforming potential emissions into energy, in addition to the resulting economy in the process, reduction of GHG emissions, engagement of local stakeholders, awareness-raising among the population and interlinkages among sectors of the economy. While reducing emissions by using locally produced energy, it contributes to greater autonomy in accessing energy in rural areas. Moreover, through composting, it generates by-products that can be used as fertilizers, reducing the use of inorganic fertilizers. Understanding the interdependence of factors is essential to enhance actions to promote sustainable development.

Brazil also promoted another example of ILA strategy at the national scale. Since the 1970's, Brazil has opted for producing fuels from biomass, which in 2017 was consolidated by the National Biofuels Policy (NBP - Law 13.576/2017). The country was able to turn crises caused by oil shocks into big opportunities for investing in sugarcane ethanol as a stable, environmentally friendly and safe source of energy for its vehicles fleet. The NBP creates incentive for harnessing residual biomass for biofuels production and promotes the improvement of the production environment and a more efficient use of inputs. As an example of joint action between agricultural and energy sectors, the NBP¹⁵ requires that biofuels producers comply with the Forest Code and that their biomass production areas are in accordance with the Agriculture Climate Risk Zoning (ZARC).

As seen through the above examples, the ILA has been essential to Brazilian agriculture, in which conservation and production units within the agricultural matrix are managed jointly for long-

¹⁴ <https://mapbiogas.cibiogas.org/>

¹⁵ Also known as RenovaBio program

term sustainability. The elements involved in the landscape approach include improvement of the implementation of environmental regularization in rural landholdings through the Rural Environmental Registry (CAR); restoring and protecting critical habitats within private landholdings (APPs and RLs); promoting on-farm sustainable agricultural management, including the restoration of degraded pastures and the implementation of an integrated Crop-Livestock-Forestry system (ICLF); and promoting land-use planning and integrating agricultural production with biodiversity conservation.

An integrated landscape approach is essential also considering the management and implementation strategies of policies and actions. As mentioned, the PNMC already considered the synergies and complementarities of different policies, in order to achieve effective results. Among other overarching legislation¹⁶, the ABC Plan and the Forest Code (Law 12.651/2012) contribute to the essential **legal framework** for supporting and guiding private rural land use, including compliance with reforestation and conservation obligations and adoption of strategies to reduce Brazilian GHG emissions with the contribution of rural producers.

Besides the legal framework for operationalizing ILA, Brazil considered two other main pillars, in addition to structuring the realities and priorities on a diversity basis: spatial management and technical assistance.

Spatial management

Planning and monitoring priority areas are crucial elements of integrated landscape management. They guide and control land-use decisions in the landscape. In Brazil, one of the main instruments used is the Agriculture Climate Risk Zoning (ZARC), that provides the indication of climatic risks for crops considering the production calendar, as well as the specific crop genetic and productive characteristics for each territorial unit. It considers, as well, historical weather series and soil type. More recently, the adoption of sustainable practices has also been evaluated. The objective is to minimize risk of meteorological adversities during sensitive and critical crop phases, hence minimizing chances of agricultural and revenue losses. This technology is, therefore, a critical tool for decision-making support, and for planning and execution of agricultural activities, as well as to guide public credit and rural insurance policies.

One of the main information bases for production planning, ZARC, allows the identification of sowing periods in which there is less chance of crop failure due to adverse climatic events for more than 40 agricultural crops and production systems. Compliance with zoning recommendations is mandatory for the farmer to access the resources of loan programs.

Strengthening the already existing and successful ZARC is a challenge. The inclusion of risk management, early warning and contingency planning will allow for a more robust tool, to guide and support farmers in their decision-making process. Identifying tools, policies and actions that can reduce uncertainty, and support farmers is essential to protect rural livelihoods, maintain food production systems and contribute to food security. Developing such methodologies and policy instruments is an opportunity for joint action and regional collaboration.

Technical assistance: technical support and information are important to strengthen the adequate knowledge and understanding among landholders about conservation, reforestation, restoration, and low-carbon emission agricultural practices as important elements of ILA. Some practices require qualified farm management skills, as well as adequate training and technical assistance for farmers and ranchers. Landholders have shown a high level of interest in receiving

¹⁶ Water Code (Decree 24.643/1934); National System of Conservation Units (SNUC - Law 9.985/2000); National Agricultural Zoning Program for Climate Risk (ZARC - Decree 9.841/2019); National Policy for Payment for Environmental Services (PNPSA - Law 3791/2019); National Biofuels Policy (law 13576 of December 26, 2017).

more intensive technical assistance on sustainable agricultural and restoration practices, which also have led them to be more likely to adopt sustainable practices through credit lines or their own resources.

An essential aspect of ILA is the respect for local characteristics. It is crucial to consider local knowledge and experiences, as well as respect local capacities and priorities. In order to establish the integrated approach throughout the world, it is essential to respect diversity and support the development of local capacities, within local priorities. The ABC Plan, while national, and responsible for the achievement of nationwide targets, has worked with the individual subnational states to develop local ABC Plans, according to local characteristics, capacities and priorities. No unilateral or top-down approach can establish the necessary actions, priorities or indicators. The large knowledge of tropical conditions and food systems has allowed Brazil to develop sensitivity to this diversity, and consider the needed flexibility, essential to strengthen resilience and promote sustainability. Any global line of action should consider the same principle, in order to respect national sovereignties and strengthen local capacities and knowledge. Therefore, it is essential that the support provided is directed to strengthen local capacities to develop strategies and indicators, rather than establish upfront universal sets of measures, underestimating the rich diversity of cultures, knowledge, and experiences that exist. Any discussion of the relationship between land and climate change should start from this premise.

While Brazil has still many challenges to achieve 100% of sustainability, the outcomes observed so far have shown that the country is in the right path. This confidence relies on more than 40 years of tropical agriculture research dedicated to developing technologies that work for the country's reality, and a strong investment in the productive sector. The proposals are scientifically sound, but above all, they also guarantee economic sustainability, an essential motivation for farmers' participation - valuing the farmer is essential if one wants stewardship. The challenge is to increase the scale and strength of action, necessary for the results to reach the entire territory, contributing to food security and, if possible, supporting ongoing actions based on successful experiences that may be convergent with the respective visions of the continuity.

Conclusion:

The experience with an Integrated Landscape Approach (ILA) has allowed Brazil to promote a better balance between natural and managed areas. A better understanding and consideration of the landscape configuration enables agricultural production, biodiversity conservation, and provision of environmental services to coexist in a supportive manner.

The issues between land and climate change are complex, and this complexity demands an Integrated Landscape Approach. Natural systems are highly vulnerable to the direct and indirect impacts of climate change, hence fragile and potentially unstable. The respect for the diversity of natural, managed and cultural landscapes is essential to strengthen resilience and adaptive capacities and face the challenges posed by climate change. The aforementioned policies and technologies contribute not only to adaptation, but also to mitigation of greenhouse gas emissions. Important as it is, this latter dimension doesn't change the fact that emissions of the agricultural sector play a minor role in the overall picture, and that around three quarters of global greenhouse gas emissions come from the production and consumption of fossil fuels. There should be no tolerance for delays in the urgent need to tackle the historical and present responsibility for emissions, particularly those from fossil sources, that are most relevant to the stability of Earth's climate, its natural ecosystems, and all the livelihoods and economic systems that depend on natural resources.

Lack of understanding regarding the complexity and particularities of climate and different types of agricultural systems that exist, as well as distinct types of farmers and traditions, undermines efforts made by many countries, small holder populations and the civil society to evaluate sustainability and promote agricultural practices that are locally relevant and globally necessary to face the challenges posed by climate change. Brazil's ILA is a clear example of synergy between public policy, long-term ambition, research and civil-society participation to forge a more environmentally sustainable and economically viable society.

Brazil is certainly very much aware of its role as a country that strongly contributes internationally to food security and hopes that the dialogue on the relationship between land and climate change adaptation related matters at SB 52 can be an opportunity to further foster the understanding at the international level of the responsibility of the UN system to amplify the awareness about the particularities of regional climatic and social conditions in the rural area and provide clever and viable means of implementation to support the dissemination of good practices and the development of relevant solutions to all. It is also of paramount importance that the discussion held at SB52 support and respect national and local specificities such as local capacities and knowledge.

The delay in actions do address climate change directly impacts human populations, natural systems and food production systems. It is essential that the discussions under the Convention reinforce the increase in ambition and the effective reduction of emissions from fossil energy for the stability of Earth's climate, its natural ecosystems, and all the livelihoods and economic systems that depend on natural resources.