Opportunities and barriers in the financing of NATURE-BASED SOLUTIONS
OPPORTUNITIES AND BARRIERS IN THE FINANCING OF NATURE-BASED SOLUTIONS

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The path to post-pandemic economic recovery is increasingly clear and reinforces what we have known for some time. It was in Brazil, at the iconic Rio-92, that the expression green economy, created in the Brundtland Report, was internalized by governments, companies and civil society. And now, almost 30 years later, with a global economic recession predicted by the OECD, an economy that guarantees an improvement in the quality of life for everybody, and the reduction of social inequalities, the conservation of biodiversity and the preservation of environmental services is considered key to recover the global economy.

A nature-based economy could result in annual business opportunities amounting to US$ 10 trillion, which would create 395 million jobs worldwide by 2030, according to the World Economic Forum. This means a path towards the resumption of the sustainable development of people and of nature with greater resilience to future impacts that can no longer be ignored.

This study details a specific point of this new economy of nature by addressing how Nature-based Solutions (NbS) and Natural Climate Solutions (NCS) play a crucial role in the removal and sinks of greenhouse gases (GHG) and are cost-effective with a potential for global scalability. It also shows the enormous potential of Brazil, with competitive advantages in relation to the rest of the world. Brazil alone represents approximately 20% of this still unexplored global potential, being dominated by protection and by reforestation, with an important participation of soil and pasture management in agriculture.

Cooperative approaches, as established in Article 6, can be the basis of future negotiation agreements, ensuring that the objectives of the Paris Agreement are met with integrity and with the lowest global cost to the world economy. As argued by the business sector in the document entitled “Business positioning on Article 6 of the Paris Agreement,” the regulation of Article 6 can also promote and facilitate the competitive advantages of the mitigation options that the country can offer and, consequently, increase the efficiency of the economy as a whole. This will allow the country to create additional sources of funds from foreign investments, without reducing the ambition and the environmental integrity of the Brazilian Nationally Determined Contributions (NDC) to the Paris Agreement. It is an additional mechanism that can contribute to the implementation of our international commitments.

In environmental terms and scope of climate ambition, a recent study shows that NbS and NCS could be responsible for 37% of the reduction of emissions needed to reach a world of up to 2 ºC by 2030, if this mobilization occurs within the next ten to fifteen years. Especially for companies in the sector of agriculture and silviculture, NCS offer an attractive opportunity when these are reflected in the adoption of their sustainable practices. For other sectors, NCS are important instruments to compensate emissions that are difficult to reduce or inevitable in the direction of net zero emissions. By ensuring the environmental integrity of these economic mechanisms, they have the potential to leverage new resources for preservation.

The Institute for Climate and Society (iCS) and the Brazilian Business Council for Sustainable Development (CEBDS) understand that the content of the publication “Opportunities and Barriers in the Financing of Nature-based Solutions” can support the qualification of the debate surrounding Article 6 of the Paris Agreement and possibly contribute to the decision-making process of the business sector, the federal and local governments and civil society as a whole. It provides a technical and pragmatic basis of how the promotion of nature-based solutions can be performed with environmental, climate and social integrity and can bring many rewards to the country.
SUMMARY
The opportunities of Nature-based Solutions (NbS), in particular Natural Climate Solutions (NCS), as greenhouse gases (GHG), removal and sink are cost-effective and have significant potential on a global scale. Brazil has competitive advantages in supplying this potential that has not yet been exploited.

Conservation actions have been financed mainly through payments by results, while those of reforestation, and to a lesser extent those of agriculture, have been financed via carbon credits in voluntary markets. Even so, in all these cases, the potential remains underused due to the lack of coordination with the Paris Agreement in a manner that contributes to the increase of the ambition of the NDCs.

Climate integrity issues related to additionality, permanence and leakage, and those of social integrity related to the economic and cultural aspects of the communities engaged in this provision, constitute barriers to the potential of these actions being widely used in international offset market mechanisms. These barriers restrict the actions of conservation and protection more than those of reforestation and nutrient and grassland management in agriculture. Therefore, the country should expand the identification and the systematization of these possibilities, particularly in agriculture where the NCS can, in addition to creating additional sources of resources, increase the perception of the sustainable and low carbon practices of the sector, with beneficial effects on its competitiveness in the international market.

The reactivation of the Amazon Fund with an expansion of state initiatives as a source of financing by results still represents a strategic instrument with significant resources for the activities of conservation and protection with local communities.

In order to enable its competitive advantages in NbS/NCS actions in international offset markets, the country will have to organize and strengthen its climate and environmental governance in the management of conservation units, in the monitoring and control of deforestation, in the flexibilization in the regulation of offsets and in the rules of the federative participation of the national strategy of REDD+, in the guarantee of institutionality of the environmental governmental agencies and in the recognition of the civil organizations that act locally in the implementation of these solutions.
To this end, the country should abandon its position against the corresponding adjustments of the NDC in the mechanism of Article 6.4, which, in addition to creating complex barriers of additionality and climate integrity, damages the country’s reputation in the Climate Conventions and its aspirations in multilateral agreements and bodies. In the case of NCS, they may even worsen the deterioration of the image of the country’s environmental and forest policies, and their consequences on the competitiveness of exports and in the attraction of foreign capital.

The fact that Brazil has presented an NDC that is considered ambitious and “economy-wide,” including all gases and separated into sectoral goals, the corresponding adjustments of the NDC would guarantee the additionality of the emission reductions and credits that the country would generate in Article 6 and, therefore, would give the country an additional competitive advantage. The trading costs would be lower and the perception of the quality of climate integrity of the Brazilian options would be higher. In short, for Brazil, the corresponding NDC adjustments, the additionality tests and the price effect on the discounts associated with the principle of the overall mitigation in global emissions increase the country’s competitiveness in the exchanges of Article 6, promote our trajectory of low carbon and preserve the image of environmental integrity of the country.

The Brazilian position should change and direct itself towards the viability of NCS activities in the ITMOs of Article 6.2, where the guarantees are from agreements between countries and where REDD+ activities are better accommodated in a jurisdictional system with more guarantees of climate integrity and lower costs of trading and supervision. If these instruments are traded without double counting and climate integrity, they can generate nature-based business for Brazil of up to US$ 17 billion by 2030.

In this regard, the country should be preparing itself to organize, in partnership with the private sector, a set of actions to be traded as a Brazilian ITMO. This would bring together NCS options in conjunction with options for the control of industrial emissions, energy efficiency, sanitation and solid waste. These could generate reductions exceeding the NDC or which are not yet financially viable in the country, but are attractive to other countries with a high marginal abatement cost and/or that wish to follow a more ambitious NDC.

Finally, the financing of the Brazilian NDC and the maximization of the competitive advantages of NbS can also be promoted with the creation of a domestic carbon market, which, independent of the facilitation of the coordination such as the international mechanisms, can make use of forest carbon offsets to assist the forest code implementation.
1 / INTRODUCTION
The narrative of the Nature-based Solutions (NbS) dates from the beginning of the millennium, but has gained more space in scientific literature and in public policies in the last ten years. NbS are actions that aim to use the services of nature to solve environmental, economic and social problems. And nature-based solutions can generally be used in conjunction with other interventions.

Among these, there are the so-called Natural Climate Solutions (NCS), which directly address the actions of conservation and management of the ecosystems in order to offer climate mitigation linked to the objectives of sustainable development.

The potential of these actions is enormous and Brazil alone represents approximately 20% of this global potential (Griscom, et al., 2020). The Brazilian potential is dominated by protection and reforestation, but there is an important participation of soil and pasture management in agriculture. This potential confirms the competitive advantages of the country in the supply of credits associated with NbS/NCS.

Next, the opportunities and barriers to NbS/NCS financing will be discussed in: (i) results-based climate finance, (ii) voluntary and regulated carbon markets and (iii) international cooperation.

The modality of financing by payment of results was favored in Article 5 of the Paris Agreement, which regulates the mechanism for REDD+, as adopted in the Amazon Fund. It attracts donations for direct results, but queries about the governance and guarantees of the actions, which ensure the environmental integrity of the results, cause donors’ aversion.

NbS/NCS actions for the generation of emission reduction credits as an international offset, although promising, have not yet been consolidated. The volume of offsets generated by forest activities and land use in the voluntary markets increased significantly between 2016 and 2018, but is still far below its potential.

The market for the use of offsets from the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) is, at the moment, the strongest component of demand for NbS/NCS credits. However, its restricted criteria for monitoring, mitigating and offsetting reversed and leaked emissions, and avoiding double counting, have become barriers to NCS credits with weak climate governance.

*The author thanks the comments and suggestions received from Ana Toni, Marina Grossi, Caroline Dihl Prolo, Shigueo Watanabe, Gabriel Lui and Karen Tanaka, and the editorial assistance of Andréia Coutinho and Matheus Zannon.
The demand in the regulated markets with carbon pricing is even more restricted in order not to harm the incentive to the decarbonization of the regulated sectors and the sectoral technological innovation, and to minimize possible effects of leakage.

Due to disputes regarding various elements of the design of these instruments, in particular those related to environmental integrity, Article 6 of the Paris Agreement, which creates international cooperation instruments, has not been regulated up to now.

Facing this impasse, a group of 32 countries created their own market rules for international offsets, independent of what the parties would be negotiating, adopting the “San Jose Principles for High Ambition and Integrity in International Carbon Markets” that emphasize the procedures to guarantee additional, permanent and leak-free emissions and double counting. These principles can guide the future negotiations in the regulation of Article 6 and create opportunities to adapt the modalities of REDD+ within the Article.

Brazil has a favored participation both in terms of volume and cost-effectiveness and is also committed to and helped to prepare the Warsaw Framework for REDD+. However, up to now, it has not been capable of making this competitive advantage feasible. In this way, it rejects market instruments or international financing that already exist without the need to compromise the scarce public resources and loses opportunities to attract international investments, to promote corporate strategies of competitive insertion of the national private sector in the low carbon economy, and to generate resources to finance the Brazilian NDC.

To reverse this situation, the performance of the climate governance carried out in the country has to change and consolidate itself credibly and with stability, creating the regulatory environment required for any type of investment and efficiency of the markets.

This text analyzes in more detail each one of the issues presented above. It begins with a conceptual discussion of Nature-based Solutions, in particular climate solutions. The next section discusses the supply potential of these solutions in the world and in Brazil. The analysis continues describing opportunities and barriers of the existing instruments of financing and offset trading. In the next section, the market instruments of Article 6 of the Paris Agreement are analyzed. The text concludes with recommendations for Brazil on how to remove the barriers and take advantage of the opportunities of Brazil’s competitive advantages in nature-based solutions.
2 / NATURE-BASED SOLUTIONS (NbS)
Nature-based Solutions (NbS) are actions that aim to use the services of nature to solve environmental, economic and social problems. They can generally be used in conjunction with other types of intervention. However, the scope of these problems and the eligibility of the solutions vary in the literature that attempts to qualify and conceptualize the NbS.

The narrative of NbS dates from the beginning of the millennium, but has gained more space in scientific literature and in public policies in the last ten years. One of the first attempts at systematization (Eggermont et al., 2015) classified these solutions into three types, namely:

- **Type 1**: better use of the existing ecosystems, minimizing the intervention in the systems themselves.
- **Type 2**: modifying the existing ecosystems to offer improved selected services.
- **Type 3**: creation of new ecosystems (for example, through ecological engineering, green roofs, etc.)

Its categorization initially advanced more in the scope of the Convention on Biological Diversity (CBD) than in the Climate Convention (UFNCCC).

This inclination of the narrative towards the issues of biodiversity can be observed in the definition by the International Union for Conservation of Nature (IUCN), which describes NbS as “actions to protect, sustainably manage and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.” The IUCN definition clearly conditions the actions to biodiversity benefits, excluding some type 3 activities, such as, for example, biomimetics.

For the IUCN, the approaches that nest under the NbS can be placed in five categories:

- **Restorers** (ecological restoration, restoration of the forest landscape and ecological engineering);
- **By objective** (adaptation and mitigation based on the ecosystem; reduction of the risk of disasters based on the ecosystem; services of climate adaptation);
- **Infrastructure** (natural infrastructure and green infrastructure);
- **Management** (integrated management of coastal zones and management of water resources);
- **Protection** (approaches to the management of conservation areas or other conservation measures by area immobilization).

The definition of NbS by the European Commission (European Commission, 2015) is directed more towards economic growth and job creation when it defines it “as living solutions inspired by, continuously supported by and using nature, which are designed to address various societal challenges in a resource-efficient and adaptable manner and to provide simultaneously economic, social and environmental benefits.” For the Commission, there are no restrictions on the types of NbS presented above, but it includes the economic dimension of cost-effectiveness.

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1. At the CBD, the focus is on an “ecosystem-based approach” and the connection of biodiversity with climate should not be established necessarily by emission reductions. Cohen-Shacham (2019) attempts to show how these two concepts align with each other.
2. See, for example, Cohen-Shacham et al. (2016 and 2019).
3. See, for example, Maes and Jacobs (2017).
4. There is, however, debate about whether the nature-based solutions exclude genetically modified organisms, but accept biomimetics in general.
The categories used are close to those of the IUCN, namely: Climate resilience, Management of water resources, Coastal resilience, Management of green space (including the improvement/conservation of the urban biodiversity), Air quality and Urban regeneration (Raymond et al., 2017).5

In both the definitions, the solutions associated with climate change result from all the actions that generally imply forest management through conservation, restoration, afforestation and reforestation even if directed, for example, towards agriculture or infrastructure, which are justified as an adaptation of the ecosystems to climate change (climate resilience), but which also serve in the mitigation as sequestration and sinks. In other words, there is more emphasis on the impacts of the adaptation of the ecosystems to climate change where the mitigation gains are generally treated as a co-benefit, i.e., conserving and using biodiversity sustainably (Balian et al., 2014).

In any case, the literature recognizes the REDD+ mechanism of Article 5 of the UNFCCC as an NbS, which promotes emission reductions by deforestation and forest degradation, and the role of conservation, of sustainable forest management and an increase of the forest carbon stocks in developing countries, in addition to approaches of alternative policies, such as joint approaches of mitigation and adaptation for the integral and sustainable management of forests.

The Warsaw Framework (WFR), which regulates the REDD+ within the scope of the UNFCCC, already includes principles aligned with the defenders of NbS actions, such as those of environmental integrity, the multiple functions of the forests and other ecosystems, the safeguards to protect indigenous and local populations, the promotion of benefits not associated with carbon and the distribution of benefits (Seddon et al., 2020).

5 In practice, the public policies in the EU are more directed towards urban NbS. See, for example, EU Commission (2015).
3 / CONTRIBUTION OF NbS TO THE REDUCTION OF CARBON EMISSIONS
There is also recent literature about the natural solutions directly associated with combating climate change, called natural climate solutions (NCS), for the protection and better management and restoration of ecosystems in order to offer climate mitigation linked to the objectives of sustainable development. (Griscom et al., 2020 and Seddon et al., 2020). The recent interest in NCS is partly due to the emphasis that the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2014) gave to negative emissions in order to achieve the trajectory of 1.5 degrees.

NCS also fall within the scope of NbS, but they refer explicitly to actions of conservation and management of the ecosystems and take advantage of their potential to store carbon, which reduces the greenhouse gas (GHG) emissions. Recently, the IPCC (2019) highlighted that the emissions generated by land use were responsible for approximately 23% of the total net anthropogenic emissions of GHG during 2007-2016, and that they were mainly caused by deforestation. Therefore, it is emphasized that the mitigation potential of the terrestrial ecosystems would be in the control of the deforestation and in the restoration and management of the forests, especially in the tropical and subtropical regions where forests grow rapidly.

The IPCC report (2019) declares a potential range of mitigation of 0.4-5.8 Gt CO2 per year from avoided deforestation and degradation of the land, as well as a carbon sequestration potential of 0.5-10.1 Gt CO2 per year in afforestation and reforestation.

A recent review of the economy of the biodiversity – the Dasgupta Report – identifies the nature-based solutions as an essential part of the package of measures to mitigate and adapt to climate change (Dasgupta, 2020).

Therefore, the NbS/NCS that incorporate forest management by conservation, restoration, afforestation and reforestation, which avoid damage to the ecosystems of the biodiversity and respect social safeguards, offer mitigation opportunities, including important benefits of resilience to the local population (Seddon et al., 2020).

To measure the cost-effectiveness of NbS, it is necessary to compare the costs of their implementation with their benefits. Engineering solutions can generally be introduced with relative security as to the type and the period of the costs. However, the identification of the implementation costs of NbS is generally more uncertain when the biological and social factors vary spatially and culturally, such as, for example, the intensity and frequency of threats, the resilience of the ecosystem and the vulnerabilities of the socioeconomic environment.

However, the literature already indicates that there is a large range of NbS that are more cost-effective. In the case of NCS, in addition to the climate benefits, the multiple environmental co-benefits of the protection to biodiversity can also be added, including the social, economic and cultural benefits for the local communities.

To assess this potential, Griscom et al. (2020) have identified twelve paths of NbS/NCS actions of protection, restoration and management of ecosystems that generate mitigation outcomes of climate change that would be quantifiable in terms of the implementation costs and the amount of storage and capture to avoid GHG emissions. These would be:

- Related to Protection: avoided conversion of forests, avoided impacts of peat and avoided impacts of mangroves.
- Related to Restoration: reforestation, restoration of peat and restoration of mangroves.
- Related to Management: trees on agricultural land, natural forest management, management of nutrients, avoided use of wood fuel, intensity of grassland and fire management.

Griscom et al. (2020) estimate, therefore, that these twelve paths of NbS/NCS can supply 6.56 Gt CO2eq/year in 79 countries between 2030 and 2050, with a marginal cost of less than US$ 100 per Mg CO2eq.6

The greater potential, higher than 60%, involves some form of protection and management of forests and, 6 Estimates, sometimes, that are more conservative than other studies that analyzed the global potential of REDD+. See, for example, Bastin et al. (2019), van Goor and Snoep (2019), Streck and Keenlyside (2015), Plugge et al. (2013) and IUCN (2009).
according to the authors, this is due to the high rates of loss of tropical forests and the relatively low economic costs of avoiding these losses. The reforestation and the management of forests in the agricultural areas, including the management of nutrients and grasslands, each represents about 20% of the potential.

The authors also indicate that Indonesia, Brazil, the Democratic Republic of the Congo and India have over half (53%) of the tropical potential of NCS. Brazil alone represents approximately 20% of this global potential.

Around 63% of Brazil's potential comes from conservation and 1% from the management of natural forests. Another 21% would be from the reforestation and almost 14% could be realized in the management agriculture, and only 1% in the conservation of wetland areas. In other words, although the Brazilian potential is dominated by protection and reforestation, there is still significant potential for NbS/NCS actions with the participation of soil and pasture management in agriculture.7

The dominance of the country in the global supply and the opportunities to take advantage of its competitive advantages place Brazil at a great advantage in the supply of credits associated with NbS/NCS.

In general, two main barriers can be indicated that prevent the expansion in the adoption of NbS in Brazil. Firstly, the inadequacy of the instruments of the financing institutions and of the market instruments that could promote the demand for this potential of NbS.

Secondly, the inflexible and sectorized approaches with no strong integration in policies, legislation and regulations of governance in the areas of protection for biodiversity, infrastructure, urbanism and climate change.

Therefore, it is necessary to analyze both the existing instruments to accommodate this competitive potential and how the climate governance of the country should be organized to maximize these advantages.

7 Although the authors recognize that they may not have captured all the opportunities of significant reforestation existing in Brazil. In any case, in conservation this potential is confirmed in other studies that analyzed the potential of REDD+ credits in Brazil, for example, Seroa da Motta et al. (2020), EU Commission (2019), Moutinho and Guerra (2017), Edwards (2016), Piris-Cabezas et al. (2016) and CGEE (2011).
4 / FINANCING OF NbS/NCS
In the case of the European Community, in the urban NbS actions, almost 75% of nature-based solutions are financed by public sources via public financing or subsidies in which regulatory and institutional barriers hinder their insertion in planning and block the business models.

As for the NbS/NCS that can offer an important contribution in combating climate change, it is estimated that they globally attract only 2% to 3% of the public financing for climate (WBCSD, 2019).

In the private sector, for the companies that work in sectors such as agriculture and silviculture, NbS offer an attractive opportunity when they are reflected in the adoption of their sustainable practices. For the others outside these areas, NCS can offset emissions that are difficult to reduce and/or are inevitable in the direction of zero net emissions.

Although NCS are an important complement to long-term strategies of corporate decarbonization, the business model and the return on investment for NbS are still uncertain and limit the interest of the traditional financial institutions. Even for “ethical” investors, the return generally is not sufficiently clear to guarantee the investment.

Next, the opportunities and the barriers to NbS/NCS financing will be discussed in (i) results-based climate finance, (ii) in the voluntary and regulated carbon markets and (iii) in international cooperation.

4.1 RESULTS-BASED CLIMATE FINANCE

Results-Based Climate Finance (RBCF) corresponds to funds disbursed by a climate financing provider to a beneficiary after the realization of a pre-agreed set of results related to the climate, with the support of specific activities that generate emission reductions from a particular source. The financed activities lead to the emission reductions, which do not necessarily generate carbon credits for their funders. This modality was favored in Article 5 of the Paris Agreement, which regulates the REDD+ mechanism.

The financing of the project covered by the fund is dissociated from the fundraising because the non-reimbursable donations reduce the liability and the risk to the project implementers. The RBCF is sufficiently flexible to support individual projects that provide climate results that are normally delivered by the private sector, or it can be structured to supply payments by results based on policy reforms or implementation landmarks achieved by the public sector. Concessional loans therefore play an important role in building confidence in the financial markets and the reduction of costs (World Bank, 2017).

The Amazon Fund, with donations of US$ 1.3 billion, was a pioneer in the results-based finance of REDD+, with 95% from only one donor: the government of Norway. The amount of these donations is equivalent to the values traded in the last five years in the voluntary market.

The initiatives that are eligible for support from the Amazon Fund are referenced by the National Strategy of REDD+ (ENAREDD+) and with governmental plans to avoid and combat deforestation.

In the case of the Amazon Fund, the projects were directed to actions to support the conservation of public forests, monitoring, technological development, adoption of sustainable practices and the generation of sustainable income.

The continuity of the Fund, or even its replication at sub-national levels with the attraction of a larger number of donors, will continue to be an important source for the development of NCS in Brazil, in particular for those of conservation/restoration and those directed towards sustainable practices in agriculture in remote communities without access to technical assistance and to credit mechanisms and/or risk mitigation, where there is no basis for market instruments.

### 4.2 TRADING OF CARBON CREDITS

In the case of NCS, there is a promising instrument, with no recurrence to public resources or private donations, which is the purchase of carbon credits for voluntary actions and/or for regulatory conformity. In other words, the use of NCS as generators of carbon credits to offset GHG emissions.

This option can be realized in the voluntary markets and in the regulated markets. In both, the acceptance of these credits obeys very restricted criteria of environmental and social integrity.

The environmental integrity includes climate integrity with permanence, additionality and the non-leakage of the stored or captured emissions, and the multiple functions of the forests and other ecosystems. The social safeguards are the protection of indigenous and local populations, in addition to the distribution of benefits.

Therefore, the NbS/NCS actions, mainly those of forest conservation and restoration, the quantification of the emission reductions - including the additionality, baselines, leakages, monitoring, uncertainty and review by third-parties - is a critical aspect to guarantee the environmental integrity of the credits. Furthermore, for credits based on projects or programs, the administrative costs would be high to guarantee the accuracy in terms of Monitoring, Reporting and Verification (MRV) in the issue and the tracking of the negotiable units (Schneider et al., 2018a and Streck, 2017). As already noted, these criteria are accommodated in the Warsaw Framework for REDD+ (WFR), which Brazil helped to develop and to which it adhered. Therefore, the regulation of the REDD+ within the scope of the UNFCCC and in the National Strategies of REDD+ require the adherence of the signatory countries to the procedures that could enable the implementation of the NCS via carbon credits.

Therefore, in the case of forest options, the jurisdictional approaches within the WFR, in addition to the advantages associated with the reduction of leakage, offer economies of scale, allowing the jurisdictions to implement consistent approaches to the MRV and baselines in every jurisdiction with a uniform system of data.

#### a. Voluntary Markets

In the regulated markets, there is a trading system of compulsory emissions with goals for the regulated agents and rules supervised by a regulatory agency. In this market, there are rules about the quantity and the types of offsets allowed for the compliance with the obligations of each regulated source. The MRV procedures for these offsets are also regulated, although they may adopt standards of certifying entities. These include the national, regional and sub-national markets and the emissions from bunkers not covered in the UNFCCC.

The offsets traded in the voluntary markets are not aimed at the compliance with the compulsory obligations as in the regulated markets. Carbon removal credits are verified and measured by independent entities that issue

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9 The concept of voluntary here does not include the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and national, regional and sub-national markets, as adopted in the Ecosystem Marketplace (2019).
CO2 Removal Certificates (CORCs). Companies that buy CORCs can activate them in the development of carbon neutral products and services.

However, there is a concern in generating credits with additionality that have environmental integrity. In the forest carbon options, nested systems are used to mitigate leakage with criteria for monitoring, verification and offset of permanence so that the credits subject to reversion are replaced either with insurance or the use of a specific buffer. However, the assessment of projects and programs in isolation, even if they are nested, has the difficulty in identifying and forecasting economic factors and the political conditions that influence the baseline scenarios, as well as estimating the effects of leakage and permanence (Schneider et al., 2019). The volume of offsets traded in the voluntary markets in 2018 was 98.4 MtCO2eq, which was almost 50% higher than in the last five years and, for the first time, with forest and land use activities leading the renewable energy certificates. The volume of offsets generated by forestry and land use activities increased by 264% between 2016 and 2018, from 13.9 MtCO2eq to 50.7 MtCO2eq, while the volume in all the other types of offset, in comparison, only grew by 21% (Ecosystem Marketplace, 2019). The offsets for tree planting projects (for example, conservation and restoration increased by 342% – from less than 2 MtCO2eq in 2016, to 8.4 MtCO2eq in 2018 – and were generated in several regions of the world. The traded volume of forest conservation was concentrated only in Peru.

The price varies significantly in this market according to the preference of the buyer and the type of credit offered. However, the average price, in 2018, of the NCS for forest and land use was around US$ 3.2/tCO2eq.

Although this growth may indicate an increase in preference for NCS, the volume of traded NCS of 50.7 Mt CO2eq and their market value of US$ 162 million, in 2018, are very small in relation to their beforementioned potential of 6.56 Gt CO2eq, in addition to being traded at very low prices in order to facilitate this potential. This volume of investments is also an insignificant portion of the investments in fossil fuels, which currently reach 1 trillion dollars per year (Bond et al., 2020).

This volume and price of the voluntary market are also well below those observed in the regulated markets, and today would be approximately 11 Gt CO2eq, in which almost half are priced at over US$ 10/t CO2eq with a turnover of revenue of US$ 44 billion (World Bank, 2019).

As will be seen next, the use of offset credits of NCS in the regulated markets also depends on more restrictive rules.

b. Market of International Civil Aviation

The most promising market for the use of offsets is the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) of the International Civil Aviation Organization (ICAO).

For the 2021-2023 pilot phase, emission units for activities started in 2016 will be considered and with a reduction for emissions occurring up to December 31, 2020. The criteria adopted by the ICAO for eligibility of the offsets significantly reflect the criteria of climate integrity of NbS.

The guiding criteria for the use of these offsets include the issue of permanence of the credits of carbon offsetting of emission reductions, avoidance or sequestration of carbon, and the risk of reductions or removals being reversed and decreased with measures to monitor, mitigate and offset the incidence of leakage.

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10 CO2 Removal Certificates. Over 75% of the emissions traded in this market, in 2018, were certified by Verra Carbon Standard (VCS) and Gold Standard (World Bank, 2019).

11 In the voluntary carbon markets, the NCS generate demand for several types of projects, such as: Afforestation, Reforestation and Revegetation (ARR), Afforestation/Reforestation (A/R), Agricultural Land Management (ALM), Improved Forest Management (IFM), reducing emissions from deforestation and forest degradation (REDD), avoided conversion of grasslands and shrubland (ACoGS), Wetlands Restoration and Conservation (WRC) and REDD+ (REDD plus elements of other activities that increase the carbon stocks) . See, Ecosystem Marketplace (2019).

12 Nested Redd+ is an approach that integrates actions on smaller scales, projects and programs, to contribute to the jurisdiction on a large scale (national or sub-national); see, for example, Lee at al. (2018).

13 Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). The emissions of international aviation are not covered by the UNFCCC, but are regulated by the International Civil Aviation Organization (ICAO) of the UN. CORSIA is a mechanism based on the market developed by the ICAO, in which airline companies will have to buy emission reduction offsets with reductions from other sectors (offset) to comply with the emission reduction goals that are not achieved with energy efficiency and low carbon fuel.

14 See ICAO (2020) for details of these criteria and of the following that are analyzed in this subsection.
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The price varies significantly in this market according to the preference of the buyer and the type of credit offered. However, the average price, in 2018, of the NCS for forest and land use was around US$ 3.2/tCO2eq.

Given the jurisdictional dimension of the emissions of land use, these guarantees will only be ensured with the capacity of governance of the country that generates the credit. In this case, a consistent National Strategy of REDD+ will be crucial for the use of these forest carbon credits, in particular the conservation credits.

CORSIA also adopts the criterion of additionality, which requires units that represent reductions, evasions or removals of additional emissions and that exceed any reduction or removal of GHG required by law, regulation or legally binding mandate. In other words, the generation of credits that result from compliance with a legal rule, such as those that regulate the Brazilian Forest Code, would not be eligible in this market.

There is also the criterion that restricts the possibility of double counting, as it could occur when an airline company uses credits that the host country of the activity of emissions reduction includes in its NDC.

In short, CORSIA is currently the strongest component of demand for NbS/NCS credits. However, as analyzed later, this opportunity also depends on the regulation of Article 6 of the Paris Agreement, because it will be crucial to identify the NCS potential of each country.

c. Regulated Markets

In the case of national, regional and sub-national markets, the offsets fall into three categories, namely:

- International regulated by the UNFCCC.
- International resulting from the integration of climate policies of pricing, through bilateral or multilateral agreements
- National generated from reductions in non-priced sectors

In all of these categories, to avoid carbon prices from falling too low, thereby harming the incentive for decarbonization of the regulated sectors and the sectoral technological innovation, and minimizing possible effects of leakage, most jurisdictions introduce limits on the offset use, in particular of international origin, by regulated entity and, sometimes, also, in the aggregated total. This limit varies, in most cases, from 10% to 20%.

The use of the mechanisms of the Kyoto Protocol (CDM and JI) in the European Union Emissions Trading System was an important source of demand for these credits, but it will no longer be adopted after 2021. In other jurisdictions, such as, for example, in Korea and China, only domestic CDM will be accepted (ICAP, 2019).

Even restricted to domestic offsets, several markets, such as New Zealand, California and The Regional Greenhouse Gas Initiative, in the USA, and some pilot markets in China, include options of forest and agricultural offsets, considering a possible acceptance, in the future, of actions for the control of deforestation (ICAP, 2019). Likewise, forest carbon offsets are also adopted in the taxation of Colombia and Mexico.

In short, the use of offsets associated with land use is restricted to those generated within the scope of the jurisdiction of the regulated markets.

However, as will be analyzed below, Article 6 of the Paris Agreement, which creates instruments of international cooperation, could become a promising source of international offsets, particularly when these are exchanges between countries with corresponding adjustments in their NDCs. However, these instruments still need to be modulated and conformed in order to promote NCS actions that actually guarantee the principles of environmental and social integrity.
5 / INTERNATIONAL COOPERATION IN THE PARIS AGREEMENT
Article 6 of the Paris Agreement creates instruments of international cooperation. Article 6.1 begins by stating that “Parties recognize that some Parties choose to pursue voluntary cooperation in the implementation of their nationally determined contributions to allow for higher ambition in their mitigation and adaptation actions and to foster sustainable development and environmental integrity.”

In other words, Article 6 creates market instruments for compliance with a more ambitious, sustainable and integral NDC and, therefore, accelerates the trajectory of low carbon. Articles 6.2 and 6.3 authorize the cooperative approach with Internationally Transferred Mitigation Outcomes (ITMO) for trades between Parties (countries) of actual emissions/allowances whose exchanges need to be accounted for within the scope of the Paris Agreement. Articles 6.4 and 6.5 create, in turn, a mechanism that allows the generation of credits by public and private entities with projects or programs of mitigation that should follow the rules and authorization of the managing body of the Paris Agreement. In the two instruments, the host and recipient parties should avoid double counting of the traded emissions or credits.

In Article 6.2, the exchanges of emission reductions between countries would be realized under international supervision following the rules on the reporting of the trades with the UNFCCC Secretariat in accordance with the rules of the Technical Expert Review (TERA6). In Article 6.4, the credits generated by an entity would first need to be authorized by a national body and then validated by a supervisory body of the UNFCCC to then be placed for trading.

Regulation of the Article 6 has still not been possible at the Conferences of the Parties, up to the present time, due to disputes regarding several elements contained in the design of these instruments (See Table 1). However, there is an expectation that these market instruments can create exchanges of mitigation outcomes that help to expand the ambition of the NDCs and, at the same time, transfer income to countries with competitive advantages in the generation of these offsets.

IETA (2019), for example, estimates that if the regulation of the article guarantees climate and environmental integrity, with low trading costs, these instruments could increase by 50% the ambition of the current goals of the Paris Agreement with trades around US$ 270 billion. And Brazil, through the instruments of this article, could generate NbS/NCS trades worth approximately US$ 17 billion by 2030.

Therefore, the following analysis will be forward-looking in order to indicate the barriers and opportunities for the promotion of NbS/NCS with the use of these instruments.
5.1 ADDITIONALITY AND CORRESPONDING ADJUSTMENTS

The concept of additionality for offset markets considers its causality. Therefore, carbon credits are considered additional to offset if the incentives created by the credit market were the cause of the activity and its subsequent emission reductions. (Gillenwater, 2012).

In the mechanisms of the Kyoto Protocol, the instrumentalization of this concept was always a source of questioning and disputes and different types of additionality were conceptualized, particularly in the CDM, in which the host party had no goals. As the definition of a baseline depends on the specification of an intervention of policy/legislation and the assessment of the additionality of the policy/legislation depends on an established baseline (or set of equally probable baselines), the intervention can be both the cause and the effect and, therefore, the assessment of the additionality can be ambiguous and circular (Gillenwater, 2012, and Schneider et al., 2018a).

This is one of the reasons why there is a dispute about how to take advantage of CDM and JI credits in Article 6 of the Paris Agreement, issued up to 2020, with a volume of up to 5 Gt CO2e. As they are based on projects, there are positions that assert that these credits within the scope of the Kyoto Protocol, which have not yet been canceled, could be fully accommodated by the project credits of Article 6.4. Given the dispute of additionality of these credits and the magnitude of the still existing credits, this carry over would significantly reduce the ambition of the Paris Agreement (see Table 1).

With all the parties having NDCs, this context changes in the market instruments of Article 6 of the Paris Agreement, mainly because corresponding adjustments of the NDC are required for the quantities traded by these instruments (see Table 1). In guaranteeing these adjustments in the transfers of emission reductions in Article 6.2 or of credits in Article 6.4, the baselines could be derived from the actual goals of the NDC. This is because the demonstration of additionality could be dispensed with because no government would have an incentive to sell non-additional mitigation. However, some NDCs may have been developed with the guarantee that they would be complied with without an increase of ambition. In other words, NDCs that are inflated with “hot air” in these cases, these savings would reach higher goals even without the market incentives of Article 6, and the transfer of emissions or credits within the scope of this Article would not represent actual emission reductions. In these cases, deriving baselines from a goal of the NDC could lead to inflated baselines, which would compromise the environmental integrity of the Paris Agreement.

There are, therefore, in order to guarantee this environmental integrity, proposals for the external verification of the additionality of an NDC against a reference scenario so that the use of the NDC goals replace the additionality tests of the policies or activities (Schneider et al., 2018b and Michaleowa et al., 2019a and 2019b).

As this mandatory validation would be difficult to implement due to issues of national sovereignty and the technical complexity beyond the capability of many countries, additionality tests would therefore be required both in the emission reductions of Article 6.2 and in the credits of Article 6.4.

One alternative would be to transform the NDCs into sectoral NDCs with baselines and goals. Only the included sectors would be eligible for exchanges to encourage NDCs with a greater coverage of the economy.

In the emissions of Article 6.2, additionality tests should be included in the reporting rules of this transfer. In Article 6.4, the credits of programs and projects would be validated with the investment tests already adopted for the CDM to prove that the proposed activity is less profitable than an existing alternative. The additionality of laws and regulation for control instruments would be assessed by results above threshold periods of financial return for compliance with the goal or standard. In the case of pricing instruments, thresholds would be used for the price of the carbon or the allocation of rights of emission by sector.

In these proposals, however, if a country voluntarily submits to a supervisory body of the UNFCCC the evidence that its NDC goals are more rigorous than the emissions in a BAU scenario, then the corresponding NDC adjustments per se

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15 See, for example, Schneider (2011).
16 It is estimated that the offer of CERs, including those inactive, could be up to 4.7 billion of RCEs, the equivalent in emission reductions of 4.7 Gt CO2e. See Re and Vaidyula (2019).
17 There is also a discussion of the environmental integrity of the adjustments in relation to their accounting frequency whether, for example, in one year or multiple years, mainly when there of exchanges between parties with NDCs with a distinct temporality. See Re and Vaidyula (2019).

18 A similar situation was identified in the Joint Implementation, see, for example, Michaleowa et al. (2019a and 2019b).
19 The additionality of investment is proven by comparing the weighted average cost of capital (WACC) of the project with benchmarks defined by the CDM, therefore avoiding more counterfactuals of possible alternatives.
One alternative would be to transform the NDCs into sectoral NDCs with baselines and goals. Only the included sectors would be eligible for exchanges to encourage NDCs with a greater coverage of the economy.

will guarantee emission reductions or credits that exceed the mitigation of its NDC, and it would not be necessary to adopt the above additionality tests to act on the instruments of Article 6 (Michaleowa et al., 2019a and 2019b).

The fact that Brazil has presented an NDC that is considered ambitious and “economy-wide”, including all gases and separated into sectoral goals, the corresponding adjustments of the NDC would guarantee additionality of the emission reductions and credits that the country would generate in Article 6 and, therefore, would give the country an additional competitive advantage. The trading costs would be lower and the perception of the quality of climate integrity of the Brazilian options would be higher. Surpluses to the NDC, including forms of mitigation related to forestry activities, could be traded in the form of emissions and credits, and it would not matter whether they were derived from active policies or legal obligations. It would be up to the country to decide whether this trading was viable or not.

However, this discussion of additionality in the regulation of Article 6.2 at the last COP25 in Madrid has not advanced significantly, and not even the inclusion of additional requirements of emissions, beyond actual and verifiable, was agreed, as was the need for the additionality to be one of the criteria of the reporting rules of this instrument to be prepared by TERA6.

In Article 6.4, when there is a requirement of validation by the UNFCCC, the texts had a section of additionality in which methodological options were included for the verification of the generating activities of credits. However, the emission reductions may be complementary and/or additional, as relevant, to the policies and measures associated with the NDC of the host Party. In other words, unlike the CDM, in Article 6.4 there is additionality in the surpluses of the NDC associated with its policies and regulation.20

There is also a discussion that the additionality would be more restricted and would only include emission reductions, in addition to a trajectory of national emissions compatible with a goal of net zero emissions of that country (Schneider et al., 2018b and Michaleowa et al., 2019a and 2019b). This criterion of additionality is more aligned with the principle of an Overall Mitigation in Global Emissions (OMGE) that exists in the text of Article 6.4, but which has also been suggested for Article 6.2 as a condition of environmental integrity. One possibility of operation of this principle would be, in addition to the adoption of the additionality tests discussed above, applying a discount to the quantities traded (see Table 1).

This discount would not be used in the compliance with the NDC, either from the host country or from the acquiring country. Its effect on the market would be to increase the price of the traded units, reducing the traded volume. How much the price and the volume would be altered will depend on the amount of the discount and the relationship between the elasticities of supply and demand. The total value of the trades could grow to benefit the host countries, but the price effect would encourage more domestic mitigation with less offsets. For Brazil, where the NDC surplus would have a higher cost than in countries with less ambitious NDCs, this price effect would again be one more competitive advantage for the country.

In short, for Brazil, the corresponding NDC adjustments, the additionality tests and the discounts associated with the OMGE increase the country’s competitiveness in the exchanges of Article 6, promote our trajectory of low carbon and preserve the image of environmental integrity of the country. However, it appears that this has not been the perception of the Brazilian negotiators since the Paris Agreement in 2015.

Even if the country reverses its strategy, as discussed in the section of voluntary markets, for the forest carbon options, the monitoring and the verification of leakage and permanence are very complex in the systems of project credits and programs by entities. Therefore, as will be seen later, the trades for emission reductions by countries can reduce this risk to the environmental integrity of the international transfers.

20 For a discussion of different options of methodological approaches to define emission baselines, see Re et al. (2019).
5.2 APPROACH BY MITIGATION OUTCOMES

Article 6.2 presents voluntary cooperative approaches with internationally transferred mitigation outcome (ITMO) for the purpose of compliance with the nationally determined contributions. However, the Parties involved should foster sustainable development and ensure the environmental integrity and the transparency, including in the governance.

To this end, they should apply robust accounting to ensure, inter alia, that there is no double counting, in addition to guaranteeing that this accounting will occur in accordance with the guidance to be defined within the scope of the convention established at the meeting between the Parties.

Article 6.3 then reinforces that the use of internationally transferred mitigation outcomes for the compliance with the nationally determined contributions will be voluntary and authorized by the participating Parties.

Articles 6.2 and 6.3, therefore, create the ITMO which can generate trade between Parties (countries) of actual emissions/allowances. However, the involved Parties will have to make corresponding adjustments in their NDCs in accordance with the amount of the traded outcomes.

Although the emissions from ITMOs do not need validation by the UNFCCC, they will be robustly monitored to guarantee their environmental integrity and transparency, in particular for the realization of the corresponding adjustments of the NDCs of the involved Parties.

ITMOs mainly seek to expand the cooperation to comply with more ambitious NDCs and not, specifically, to create a market. Therefore, Articles 6.2 and 6.3 create an international mechanism of offset trading. This offset would not be for use in a specific market, but for the voluntary international cooperation to comply with the NDCs.

However, the existence of a domestic instruments of carbon pricing will be an important competitive factor. Countries with carbon market or tax will be more capable of operating these ITMOs, because the pricing strengthens the governance of the NDC and offers a reference of trajectory of price/marginal cost of the mitigation that helps in the divide of the most economically attractive options.

Most important, however, is that the ITMOs maximize the cost-effectiveness of the worldwide effort by promoting the trading between parties with differences in the marginal cost of GHG abatement. Because the marginal costs are generally higher in wealthy countries, ITMOs also mean opportunities for the transfer of resources to poorer countries.

ITMOs, like all offsets, are an interim solution that, as already mentioned, reduce the incentive for sectoral technological innovation and increase the risk of leakage. Therefore, in the same way that restrictions were indicated for the use of offsets in the regulated markets, countries interested in this trading should adopt quantitative restrictions in relation to their NDC, even when it is to comply with more ambitious goals.

In principle, there are no barriers to ITMOs including NbS/NCS emissions. However, there is a debate about how to consider the results of REDD+ as a source of ITMOs. How to mitigate risks of permanence and leakage without creating high trading costs and harming environmental integrity permeates the reluctance to include REDD+ activities (Marcu, 2017)? Furthermore, there is the dispute of regulatory additionality that, as in CORSIA, does not recognize additionality in the reductions, which are regulatory obligations for conservation and reforestation.

There are also those who argue that, as ITMOs are trades between countries, the corresponding adjustments in the NDC could easily be accounted for, because the rules and the modalities established in the WFR require and provide guidance for the development and the
transparency of quantified levels of reference of forest emissions, which avoids double counting and allows independent technical assessment (Graham, 2017 and Streck et al., 2017), including with the InfoHub on REDD+, which publishes information on the results of REDD+ activities and the respective results-based payments.

This possibility of inclusion of REDD+ activities will be subject to the regulation in Article 6.2 when describing the eligible modalities and activities of mitigation.

The texts of the regulation that were the subject of discussion at COP25, although not having been approved, accepted reductions for removal in Article 6.2, but placed options of sinks and avoided deforestation in parentheses or did not even include them.

5.3 MECHANISM BY PROJECTS

Another offset mechanism was created in Article 6.4 to encourage and facilitate participation in the mitigation of greenhouse gas emissions of public and private entities, with the objective of contributing to the mitigation of greenhouse gas emissions, supporting sustainable development and achieving an overall mitigation in global emissions. The trades in this mechanism, unlike ITMOs, will be under the authority and guidance of the Convention by a body yet to be designated.

Next, Article 6.5 states that the emission reductions resulting from this mechanism should not be used to demonstrate the compliance with the nationally determined contribution of the host Party, if used by another Party to demonstrate the compliance with its nationally determined contribution. In other words, there can be no double counting, thereby the amount of traded emissions will be accounted for in the party that buys and, therefore, cannot also be used in the NDC of the party that sells.

The mechanism of Articles 6.4 and 6.5, instead of trading actual emissions/allowances, uses project credits developed by public and private entities. Even so, the involved countries will have to make corresponding adjustments in their NDCs in accordance with the amount of the traded credits.

As the participation of entities will be made through investments in projects that generate credits related to the emission reductions, the measurement of these credits will depend on a baseline and, therefore, the issue of additionality will be crucial. Therefore, the measurement of these credits will follow rules and will be supervised and validated by the Convention.

Article 6.4 conception was initially idealized in the Brazilian proposal as an improved CDM (Brazil, 2014) and was even, many times, informally called a Sustainable Development Mechanism (SDM). Considering that in the Paris Agreement all the countries have their goals in the NDCs and that exchanges of these offsets require corresponding adjustments in these goals, this mechanism is more similar to the mechanism of Joint Implementation (JI) of the Kyoto Protocol than to the CDM. It would be closer to the CDM if it did not require corresponding adjustments of the NDC and, therefore, it would have to go through once again the same technical issues of additionality that, although they have evolved and become more rigorous, as already discussed, are still questioned by the weak environmental integrity, the high trading costs and complex governance.

Likewise, in Article 6.2, it is debated whether sinks from REDD+ activities in conservation and avoided deforestation should be modalities of generation of credits.

However, as the generation of credits and their trading take place between entities, and not between countries, as in ITMO, the projects of Article 6.4 would have to be nested in the national strategies of REDD+.

As already discussed, REDD+ activities for forest conservation and restoration by nesting create a significant difficulty in accompaniment and monitoring to guarantee the additionality by establishing that the multiple baselines required at different levels are consistent and coherent. In other words, how to allocate the project levels within the national (or sub-national) limits. The risk of leakage is also greater for activities at the project level, because there are factors, such as the generating activity and its effects on the market, that can cause the emissions to move to areas outside the limits of the project.

Even with accounting and financial procedures to mitigate the risks of additionality and leakage, the inclusion of REDD+ activities in conservation and avoided deforestation continue to be a challenge.

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21 Lima REDD+ Information Hub on the REDD+ Web Platform.
22 SBSTA 51 - Guidance on cooperative approaches referred to in Article 6.2 of the Paris Agreement.
23 Moutinho and Guerra (2017) and Chagas et al. (2011).
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On the other hand, restoration and reforestation activities, including agricultural activities, face these risks significantly less and, therefore, should be favored in the mechanism of Article 6.4. In the case of reforestation, the large experience and knowledge consolidated with the CDM mechanism favors the competitiveness of the country.

In the activities related to agriculture, there is a need for investments in identification, development and training. This promotion, in addition to creating additional sources of resources, would increase the perception of the sustainable and low carbon practices of the sector with beneficial effects on its competitiveness in the international market.

In the same way that, in the ITMO, the texts of the regulation that were the subject of discussion at COP25, although not having been approved, accepted reductions for removal in Article 6.4, but placed options of sinks and avoided deforestation in parentheses or did not even include them.24

Despite the guarantees of additionality, environmental integrity and permanence that the regulation of this Article 6.4 may require, the use of offset via exchanges between private entities should be restricted, as already happens in the national carbon markets, in order not to reduce the incentive to technological transition. This restriction should be more severe when it harms the replacement of fossil energies in which the competitive advantages of the renewable energies are already increasing and less rigid in sectors where this transition is still less dynamic, such as, for example, in the agricultural activities.

However, until then, the Brazilian position in the regulation of this Article 6.4 appears to indicate a totally opposite direction. Brazil, from the formulation of the Paris Agreement up to the last COP25 in Madrid, in 2019, has argued that the corresponding adjustments of the NDC are not obligatory in the mechanism of Article 6.4. The Brazilian representatives argued that, with these adjustments, the Brazilian opportunities in this market would be significantly reduced, because the goals are absolute for the entire economy and all gases. This Brazilian position has created a loss of reputation for the Brazilian leading role in the defense of climate integrity and created difficulties in the regulation of the Article. Furthermore, as will be seen below, this Brazilian position is not in line with the main signatory countries of the Paris Agreement.

24 SBSTA 51 - Matters relating to Article 6 of the Paris Agreement: Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement
5.4 SÃO JOSÉ PRINCIPLES

During COP25 in Madrid, facing the impasse of the regulation of Article 6, a group of 32 countries, many emerging\textsuperscript{25} and most European countries, created their own market rules, independent of what the Parties would be negotiating, adopting the “San Jose Principles for High Ambition and Integrity in International Carbon Markets (SJPs),” as follows:

- Ensures environmental integrity and enables the highest possible mitigation ambition;
- Delivers an overall mitigation in global emissions, moving beyond zero-sum offsetting approaches to help accelerate the reduction of global greenhouse gas emissions;
- Prohibits the use of pre-2020 units, Kyoto units and allowances, and any underlying reductions to the Paris Agreement and other international goals;
- Ensures that double counting is avoided and that all use of markets toward international climate goals is subject to corresponding adjustments;
- Avoids locking in levels of emissions, technologies or carbon-intensive practices incompatible with the achievement of the Paris Agreement’s long-term temperature goal;
- Applies allocation and baseline methodologies that support domestic achievement of the NDC and contribute to the achievement of the Paris Agreement’s long-term temperature goal;
- Uses CO2-equivalence metrics in reporting and accounting for emissions and removals, fully applying the principles of transparency, accuracy, consistency, comparability and integrity;
- Uses centrally and publicly accessible infrastructure and systems to collect, track and share the information necessary for robust and transparent accounting;
- Ensures incentives to progression and supports all Parties in moving toward economy-wide emission goals;
- Contributes to quantifiable and predictable financial resources to be used by developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation;
- Recognizes the importance of capacity building to enable the widest possible participation by Parties under Article 6.

These principles appease the main disputes discussed in the regulation of Article 6, presented in Table 1, with proposals of common design for these issues for the two instruments.

Considering the group of countries that have already adopted it, the SJPs should influence the discussions that develop on the regulation of Article 6. They can even create conditions to initiate the adoption of the ITMOs, in case it is decided to approve the regulation of the Article by parties. In this regard, the SJPs can guarantee the ambition and the integrity in the “international markets of carbon offsets,” whether inside or outside the UNFCCC. Therefore, they will influence the regulation of Article 6, as well as CORSIA and other voluntary markets.

There is also an impact of the SJPs on the financing of NbS/NCS of conservation and avoided deforestation. These principles can affect the inclusion of these activities, particularly in the mechanism of Article 6.4, when the emphasis on climate integrity with principles of transparency, precision, consistency, comparability and integrity is most vulnerable. On the other hand, this emphasis can create a space that generates an opportunity to include the activities of jurisdictional REDD+ within the scope of the ITMOs, when, as already made clear, the governance procedures are safer in the relationships between countries in the form of rights of emission and not of credits.

\textsuperscript{25} A total of 12 non-OECD countries and from South America including Colombia, Paraguay and Peru.
6 / CONCLUSIONS
The global potential of NbS/NCS generates significant opportunities in worldwide actions to combat global warming. The barriers to these opportunities, as described in previous chapters, are the guarantees that these NbS/NCS actions ensure environmental and social integrity with additional and permanent results and without leakage of emissions.

In view of all the limitations of the international instruments of financing discussed above, the effectiveness of the climate governance will be a decisive factor to minimize these difficulties and to expand the promotion of the NCS, in particular, for those of sinks.

Brazil has a favored participation both in terms of volume and cost-effectiveness and is also committed to and helped to prepare the WFR for REDD+. However, up to now, it has not been capable of making this competitive advantage feasible.

The opportunities of NbS/NCS favor, mainly, the attraction of international investments and the corporate strategies of insertion of the national private sector in the low carbon economy that today constitute a factor of competitiveness. The use of these opportunities by Brazil may even generate resources to finance the Brazilian NDC.

As discussed, the international mechanisms that already exist to promote these opportunities use efficient market instruments or grants and, therefore, do not compromise the scarce public resources. However, Brazil has not been capable of creating a successful strategy to access them.

To reverse this situation, the performance of the climate governance carried out in the country has to change and consolidate itself credibly and with stability, creating the regulatory environment required for any type of investment and efficiency of market instruments.

Everything indicates that Brazil, at the moment, is not heading in the direction of generating these incentives to governance. This is because the federal management is questioning the regulatory validity of the demarcation of conservation units and of the monitoring and control of deforestation, weakening the institutionality of the environmental government agencies, and discrediting the civil organizations that work locally in the implementation of these solutions.

Furthermore, the discontinuity of the promising actions of the Amazon Fund wastes an important source of financing, in particular, for the federative cooperation in the implementation of natural climate actions.

ENREDD+, for its part, does not currently allow the trading of international offsets, placing the country on the margins of voluntary and regulated carbon markets, such as, for example, CORSIA.

As already discussed, the fact that Brazil has presented an NDC that is considered ambitious and “economy-wide”, including all gases and separated into sectoral goals, the corresponding adjustments of the NDC would guarantee additionality of the emission reductions and credits that the country would generate in Article 6 and, therefore, would give the country an additional competitive advantage. Trading costs would be lower and the perception of the quality of climate integrity of the Brazilian options would be higher. Surpluses to the NDC, including forms of mitigation related to forest activities, could be traded in the form of emissions and credits, and it would not matter whether they were derived from active policies or legal obligations. It would be up to the country to decide whether this trading was viable or not.

In short, for Brazil, the corresponding NDC adjustments, the additionality tests and the price effects on the discounts associated with the OMGE, not only increase the country’s competitiveness, but also promote our trajectory of low carbon and preserve the image of environmental integrity of the country.

The demand that the country could benefit from with these instruments, even if restricted to reforestation and to agricultural activities for the management of nutrients and grasslands, will not be recognized if the Brazilian position continues with little adherence to climate integrity in the regulation of the mechanism of Article 6.4.

Even if the Brazilian position of non-recognition of the corresponding adjustments of the NDC prevail in Article 6.4 and, therefore, allowing the country an almost unlimited possibility of forest carbon credits for international offset, it is worth pointing out that our competing markets and those of buyers will be aligned with the São José
Principles; consequently, the market space for Brazilian credits will be very restricted. The prices of the Brazilian credits accordingly will be low enough to inhibit this desired potential of supply, threatening the viability of the activity itself, thereby wasting our competitive advantages and the opportunity to attract investments.

Not to mention that, by allowing credits with this climate fragility, we would be tarnishing the country’s reputation and complicating our international insertion and participation in multilateral agreements and in the OECD. Furthermore, it could even aggravate the deterioration of the image of the country’s environmental and forest policies and its consequences in the competitiveness of Brazilian exports.

The controversial Brazilian position that opposes the corresponding adjustments of the NDC in Article 6.4, in addition to threatening the environmental integrity and, therefore, giving the country a negative image, also diverts the focus from the competitive advantages of the NCS that the country has in the options of the ITMO. As in the ITMO the mitigation outcomes are national and negotiated between countries through packages of actions, this mechanism accommodates better results from jurisdictional systems of conservation activities, with a greater guarantee of environmental integrity regarding additionality, permanence and leakage, with much lower trading costs than the credits of the mechanism of Article 6.4.

Furthermore, the country should be more concentrated on collaborating in the merger of the REDD+ activities for conservation and restoration into Article 6.2, and not Article 6.4, as it has done so far. With a posture of support for the environmental integrity and climate additionality of the corresponding adjustments, the country should be joining the group of signatories of the San José Principles, and operating in it to help facilitate this alternative of the NCS in Article 6.2, even taking advantage of the acquired respectability that would be acquired in the construction of the protection instruments for the environmental integrity of the REDD+ mechanisms.

The country will present competitive advantages by organizing, in partnership with the private sector, a set of actions to be traded as a Brazilian ITMO that would bring together options of NCS with options for the control of industrial emissions, sanitation and solid waste, in addition to the energy efficiency that would generate reductions exceeding the NDC or which are not yet financially viable in the country, but which are attractive to other countries with a high marginal cost of abatement and/or who wish to follow a more ambitious NDC.

This combination of the NCS with other types of emission reductions from non-forestry sources, which are equally cost-effective, within the scope of an ITMO creates market value, because it mitigates the risks of permanence of the NCS. Not to mention that the scale of the ITMOs can generate more significant revenues with a lower trading cost that could, in addition to remunerating its providers, generate surpluses to be directed to the financing of the Brazilian NDC.27

Finally, it is worth emphasizing the importance of the creation of a domestic carbon market for emissions from fossil sources that, in addition to encouraging the transition to a low carbon economy, creates a scenario of reference prices to signal the competitive advantages in the generation of international offsets in the packages of ITMOs and even for the mechanism of Article 6.4. Furthermore, the domestic carbon market, by allowing the use of forest carbon offsets resulting from the legal reserve surpluses28 and from other REDD+ mechanisms, not yet used for environmental regularization, creates incentives for forestry conservation and restoration and, therefore, also compliance with the Brazilian NDC. Carbon pricing instruments with these characteristics have already been designed and analyzed in the PMR Brazil study by the Ministry of Economy and in the strategies proposed by the Brazilian business sector.29

27 See, for example, Seroa da Motta et al. (2020).
28 In the form of the Environmental Reserve Quota (Cota de Reserva Ambiental, CRA) as already stated in the Forest Code.
### TABLE 1 - Regulation of Article 6 of the Paris Agreement

The following are the summarized main points of dispute that have prevented the regulation of the market instruments of Article 6.

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>OBJECTIVE</th>
<th>DISPUTE</th>
<th>ALTERNATIVES IN DISCUSSION</th>
</tr>
</thead>
</table>
| Carry over * of the CDM and JI credits | How to take advantage of CDM and JI credits. | Given the level of dispute of additionality of these credits in general and the magnitude of the still existing credits, this carry over would significantly reduce the ambition of the Paris Agreement. | a. Do not allow any carry over.  

b. A partial carry over by vintage (type and year of generation)  

c. Creation of a global fund for the acquisition of these credits with discounted values.  

Option c is the one that most guarantees the climate integrity and the ambition of the Paris Agreement. |
| Corresponding Adjustment (CA)** of the NDC | Preventing the aggregate reductions from being lower than the aggregation of the NDCs (double counting). | (i) If credits after the Paris Agreement generated outside an economy-wide NDC have no need of a CA, because they result in a greater ambition, how to account for them without double counting if, in the end, the difference of inventories is less than the sum of the goals plus credits?  

(ii) How to identify what is outside the NDC without the risk of double counting.  

(iii) How to measure additionality without facing the same problems of the CDM. | a. Corresponding adjustments of the NDC would be required in all the market instruments of the Article.  

b. The adjustment of the NDC would not be required for sectors and gases outside the NDC, even if this would encourage more modest NDCs in the future.  

c. Accept, for an initial period of 3 to 5 years, only the generation of credits without corresponding adjustments of the NDC.  

Option a is the one that most guarantees the climate integrity and the ambition of the Paris Agreement.  

Option c allows for the immediate implementation of the instrument with incentives to strengthen climate governance for the identification and viability of the corresponding adjustments of the NDC that are cost-effective for the parties. |
<table>
<thead>
<tr>
<th>ISSUE</th>
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<tr>
<td><strong>Principle of Overall Mitigation in Global Emissions (OMGE)</strong>***</td>
<td>Requests that these forms of cooperation broaden the ambition of the Paris Agreement, therefore, it would need to show the increase in ambition towards zero net emissions or else discount or annul part of the reductions of the exchanges;</td>
<td>This request was explained in item d of Article 6.4, but does not appear in Article 6.2, where the trades would generally be purchased by countries with a higher level of emissions and, therefore, with a greater need to expand ambition.</td>
<td>Do not consider or consider in both 6.2 and 6.4. Adopting both instruments would be important so that the corresponding adjustments of the NDC can effectively generate more additional emissions to the trajectory of zero net emissions.</td>
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<tr>
<td><strong>Share of Proceeds (SoP)</strong>**</td>
<td>Separate a part of the resources generated in the trades of the instrument for financing from other activities.</td>
<td>In Article 6.4, the obligation appears explicitly to separate a fraction of funds from activities within the scope of the instrument to cover administrative expenses of the UNFCCC with the instrument and to help in the assistance to adaptation actions of the developing countries that are particularly vulnerable to the negative effects of climate change.</td>
<td>Do not consider or consider in both 6.2 and 6.4. Adopting both instruments would be crucial to generate an autonomous source of resources and important for adaptation in vulnerable countries.</td>
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BRAZIL. Views of Brazil on the elements of the new agreement under the convention applicable to all parties. UNFCCC, November 2014.


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