

The emerging REDD+ regime of Brazil

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Brazil has exercised a leadership in the International scene about climate change mitigation and adaptation. Internally, it has been demonstrating institutional, legal and technical capacity to monitor and reduce deforestation in the Amazon, capacities also required to the development of a national Reducing Emissions from Deforestation and Forest Degradation (REDD) system. In this article, we present the progress on the REDD+ debate under the UN Framework Convention on Climate Change and the Brazilian government trajectory towards a positive REDD+ agenda. We also discuss the relevant Brazilian legislation that can support a REDD+ regime: the National Policy for Climate Change, the Amazon state plans for deforestation reduction and the current debate and proposal of a REDD+ regime in Brazil, discussing their contexts, threats and opportunities. Funding opportunities are also discussed, with emphasis on the role of the Amazon Fund on fostering the REDD+ activities in Brazil. At the end, we propose a mechanism of REDD+ benefits sharing, based on a stock-target and flow approach.

While curbing fossil fuel emissions in developed countries is the primary action required to reduce GHG emissions, tropical forests must also remain largely intact if we want to bring global warming under control [1]. Approximately 0.8 ± 0.2 to 2.2 ± 0.8 PgC is released to the atmosphere annually from deforestation (10–35% of global carbon emissions) [2], a volume similar to current US annual emissions. The Reducing Emissions from Deforestation and Forest Degradation plus (REDD+) mechanism, as addressed by the **UN Framework Convention on Climate Change** (UNFCCC), can be an important part of the overall strategy to reduce emissions from deforestation and more broadly to reduce GHG emissions [3,4] while generating social and environmental co-benefits, such as the conservation of biodiversity, the regulation of water and climate cycles, and the reduction of poverty in forest areas [5].

Last year, during the UNFCCC Conference of Parties (COP) 16, the parties agreed on a balanced package of decisions for the **Ad Hoc Working Group on Long-Term Cooperative Action under the Convention** (AWG-LCA)

text [10]. The REDD+ mechanism was one of the greatest outcomes of this package. Besides having established the scope of the mechanism, the decisions under the AWG-LCA text for REDD+ gave clear guidelines on the implementation of the mechanism under a three-phased approach: the development of a national REDD strategy and capacity building; REDD strategy implementation and monitoring; and national-scale implementation of REDD programs and projects [6,7]. In addition, the text for REDD+ included **social and environmental safeguards**, providing countries and the private sector guidance and greater confidence that REDD+ could become a reality.

Under this context, Brazil faces a unique situation. While more than 80% of its electrical power comes from renewable sources, the country is also historically the world's biggest carbon emitter from deforestation (0.2 PgC/year in the Amazon region alone during the 1990s or 2–3% of global total) [8]. Currently, approximately 60–70% of Brazil's total emissions come from land use, in particular from deforestation (~50%) and forest fires in the Amazon (carbon emissions from burning

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Key term

REDD+: During Conference of the Parties 16, the scope of the REDD+ mechanism was finally defined under the *Ad Hoc Working Group on Long-term Cooperative Action* decisions. It includes: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks. In this sense, REDD+ is a set of measures, policies, approaches and positive incentives being negotiated under the *Ad Hoc Working Group on Long-term Cooperative Action* of the UN Framework Convention on Climate Change.

fossil fuels in Brazil represent approximately 0.095 PgC/year) [9,102]. An area equivalent to approximately 726 million km² is already deforested and converted mostly to pasture (**Figure 1**). Despite the country's relative low contribution to global GHG emissions, the deforestation in the Brazilian Amazon alone results in emissions equivalent to 30–40% of the annual reduction goals for industrialized countries listed in the Annex I of the Kyoto Protocol [10,11]. These emissions could be doubled by human-caused tropical forest fires in years of extreme drought [12,13] and the deforestation could potentially

get worse in the coming decades [14,15].

Paradoxically, over the last 5 years, Brazil has become the world's leading nation in both committing to and achieving GHG reductions. During the UNFCCC in Copenhagen (COP15), the Brazilian government announced its official goal of reducing GHG emissions. Following the announcement by the government, the National Congress voted into law the National Policy for Climate Change (NPCC; Federal law 12187/2009) and, last year, during COP16 in Cancun, that goal was turned into Decree 7.390, regulating the NPCC and giving details on the path that Brazil intends to follow in

order to reach its targets by 2020. This includes a goal of reducing Amazon deforestation (its major source of emissions) by 80% by 2020, a target that it is already beginning to be achieved [15]. This commitment made by the NPCC, and progress in slowing deforestation, have been supported by Norway's US\$1 billion financial commitment to the Amazon Fund, state-level REDD+ programs in the Amazon region, market shift towards the rejection of soy and beef supply chains based on Amazon deforestation, an extensive program to create new protected areas in Amazon and lower international market prices of grain and beef commodities [15,16].

Finally, there is a growing perception in Brazilian society that the economic and social costs involved with deforestation in the Amazon are much higher than those related to its conservation. Society is starting to perceive forest protection and deforestation reduction as a way to contribute to climate change mitigation, biodiversity conservation, and social and cultural protection for local communities and indigenous groups.

The best answer to the challenge imposed by the NPCC in Brazil has been reflected by the growing and broad debate on REDD+, promoted by the private sectors, national and state governments, nongovernment organizations (NGOs) and social movements, including forest based groups of indigenous people and local communities. However, all the aforementioned progress is threatened by a broad attack on the environmental legislation (Forest Code), escalating federal and private investments into deforestation-promoting infrastructure, and the inevitable recovery of beef and soy prices, as well as the general global economic recovery. In the long term, Brazil's powerful agricultural sector is planning to double its agricultural and livestock output by 2020, threatening to undo the NPCC. Also, recent studies have demonstrated that Amazon deforestation will increase in the coming decades. It is estimated that 32 PgC could be emitted into the atmosphere by 2050 if deforestation follows the trend of the last two decades [16].

Considering these threats, it is urgent that Brazil chooses to base its development in the next decades on a low carbon emission economy, where the forest sector plays a fundamental role. We believe that Brazil, through its NPCC, is well situated to promote such development, with REDD+ being a fundamental element of this new economic order.

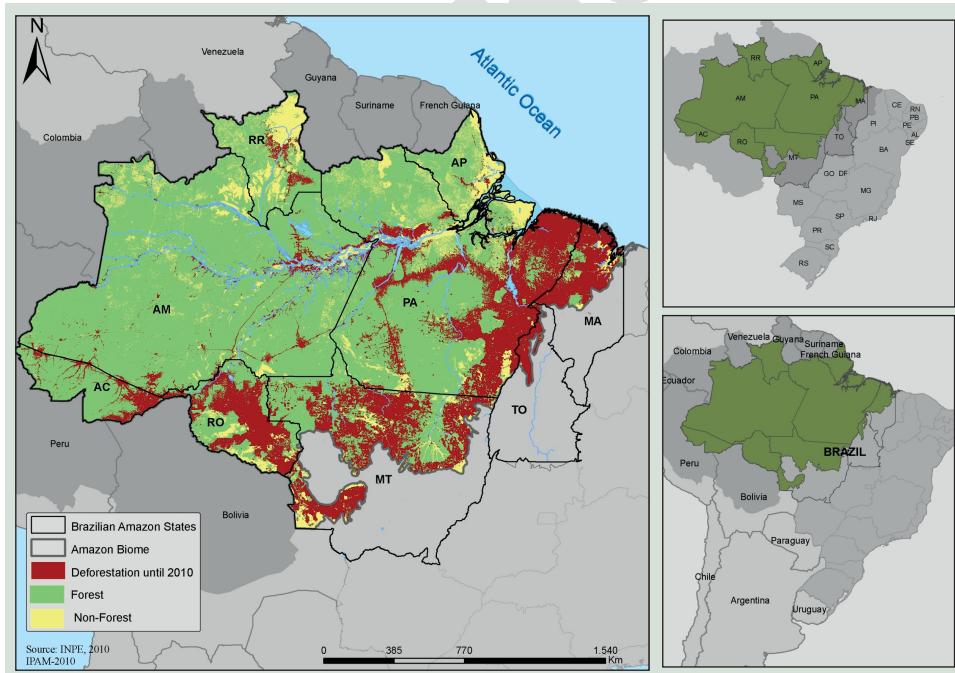


Figure 1. Deforestation in the Brazilian Amazon (2010).

Data from [116].

REDD+ in Brazil: the history

Historically, Brazil's position on the reduction of GHG emissions from deforestation as an eligible action to mitigate climate change has been conservative. Forest conservation or avoided deforestation had not been considered an action for climate change mitigation [11]. The technical basis of this opposition was centered on the concerns about 'additionality' (i.e., avoiding deforestation does not represent an effective action to reduce emissions), the uncertainty regarding the 'permanence' of carbon in forests (since forests can be cut, burned and logged), the high risk of 'leakage' (i.e., the possibility that while a forest is conserved in one area, deforestation could be displaced to and, thus, promoted in another), the lack of law enforcement and the lack of technological capacity to monitor deforestation accurately.

The conservative position of Brazilian government on issues relating to forests in the UNFCCC, however, has changed over the last 5 years (since the COP11 in Montreal, 2005). The starting point for this change was the discussion around the concept related to the Compensated Reduction (CR) of deforestation, proposed by the Amazon Environmental Research Institute and partners during COP9 in Milan, 2003. Through this mechanism, developing countries would receive international financial compensation for avoided emissions from deforestation. Therefore, the countries would be able to promote real reductions (using agreed historical average level of deforestation) from their deforestation-related national emissions. Once compensation had been received, the countries would agree to not increase or to further reduce deforestation in future commitment periods. This proposal was supported by the Ministry of Environment and its Minister Marina Silva, which brought the climate change discussion from the Science and Technology Ministry to the Ministry of Environment, and pushed other government sectors to take a position on the issue. CR can be considered the precursor of REDD+ and the Amazon Fund in Brazil. Under UNFCCC, the CR concept was reinforced by the request made by Papua New Guinea and Costa Rica to the Convention Secretariat (in 2005) to include the REDD program in the official agenda, requiring Brazil and other tropical countries to take a position on it. In addition, the Stern Review on the Economics of Climate Change was published in 2006, bringing a comprehensive review on the economic losses provoked by climate change [3].

Other aspects influencing the change in the Brazilian government's position towards the establishment of quantitative targets to reduce deforestation, carbon emissions and towards a positive CR agenda, was the reduction of deforestation rates from 2006 to 2010 to below 65% of the historical mean. This was a consequence of effective actions taken by the Brazilian government to promote

advances in remote sensing data and technological measurement of tropical deforestation, the expansion of Amazon protected areas network, and the Federal government campaigns to publicize and cancel credit for illegal land holdings [11]. Despite the retraction of the region's cattle and soy industries between 2005 and 2006, the Brazilian government efforts contributed significantly to the reduction of deforestation rates, demonstrating the government capacity to monitor and reduce deforestation in the Amazon. The former ministry Carlos Minc, based on the positive results achieved by Brazil's environmental policy, got support from different ministries to change the Brazilian position on the international negotiation scene.

The social and environmental movement demanding the reduction of sky-rocketing deforestation rates also pressured the Brazilian government to take a more proactive stance on the inclusion of deforestation reduction as a valid action for climate change mitigation. Finally, the national debate on climate change and deforestation became better informed with the publication of several scientific studies by the Large Scale Biosphere–Atmosphere Experiment in Amazonia, relating the role of the Amazon forest to the regional hydrological balance and global carbon cycle [103]. As a consequence, the Brazilian government began to change its position on REDD+ more explicitly, launching its proposal in favor of 'positive incentives' for reducing deforestation during the COP12 and presenting the Amazon Fund as an example of this incentive. In COP13, the 'Bali Action Plan' reinforced the necessity for the establishment of an economic mechanism to finance policies seeking to conserve large areas of tropical forests based on intangible commodities such as the environmental services provided by standing forests. This proposal was recognized and pursued by the Brazilian Amazon states' governments and with the support of the Amazon Governors Forum established a task force to debate REDD+ and its potential compensation for those states making efforts to reduce deforestation [104]. Some of these states (Acre, Amapá, Amazonas,

Key terms

United Nations Framework Convention on Climate Change:

Adopted in May 1992, this Convention establishes as its final objective, to stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (Article 2). Through this Convention, entered into force in 1994, the United Nations recognized the climate change as a real problem at a global scale and set out the necessity of sharing the burden of combating climate change.

Ad hoc Working Group on Long-Term Cooperative Action under the Convention:

This working group was established in Bali, in 2007, to conduct negotiations on a strengthened international deal on climate change. Set to be concluded in Copenhagen in 2009, this working group was directed last year to continue its work until the next Conference of Parties that will take place in Durban, South Africa, by the end of this year (2011). REDD+ is being discussed under the United Nations Framework Convention on Climate Change on the scope of this working group.

Social and environmental safeguards:

Basic principles used to ensure that environmental and social aspects are evaluated in decision making, help assess and reduce risks, and provide a mechanism for consultation and disclosure of information. In other words, these safeguards in relation to REDD+ mechanism are a governance mechanism necessary to translate opportunities created by REDD+ into effective deforestation reduction, biodiversity conservation benefits, social benefits and respect for the rights of indigenous peoples, small land owners and local communities.

Key term
Governor's Climate and Forests Task-Force: A subnational collaboration between 16 states and provinces from the USA, Brazil, Indonesia, Nigeria and Mexico, which seeks to integrate REDD+ and other forest carbon activities into emerging GHG compliance regimes in the USA and elsewhere.

Mato Grosso and Pará) also became involved in the **Governor's Climate and Forest Taskforce** (GCF), which is on a pathway to develop and implement compliance-grade REDD+ offset rules [105]. In addition, forest people (indigenous people and local communities) initiated a debate on REDD+ and their rights, which cul-

minated in several declarations and submissions made by these groups to the UNFCCC at various points in the development of REDD+, the establishment of the REDD+ Social and Environmental Principles and Criteria [106] and the implementation of the REDD Observatory, a forum for social control for REDD projects [17]. More recently, several private sector coalitions in favor of climate change mitigation have been established and all of them have recognized REDD+ as a welcome and efficient way to reduce emissions globally.

At COP15 in Copenhagen, Brazil announced its NPCC, which established a national commitment to reduce GHG emissions below business-as-usual levels by 2020. The NPCC establishes a nation-wide emissions

reduction of 36–39% below 2005 levels by 2020 (equivalent to 10% below 2005 levels) (**Table 1**). Most of these reductions will be achieved through 80% reduction in deforestation in the Amazon region (which is largely achieved already), a 40% reduction in savanna woodland clearing in the Cerrado region (Brazilian savannas) and reductions in emissions from the 200 million-head cattle herd. In addition, the Ministry of Agriculture, Livestock and Supply recently announced a \$1.97 billion program of low-interest agricultural loans intended to favor farmers and ranchers who are lowering their GHG emissions and the National Congress approved the bill to create the National Fund on Climate Change.

Moreover, as another positive signal of transition of the Brazilian Government towards a positive agenda for REDD, it has been recently announced that the NPCC will be coordinated directly by the Chief of the Civil House, Minister Antonio Palocci, in order to build a new model of governance to the climate agenda. Taking in consideration that climate change is a transversal issue with consequences and interests to different areas, such as agriculture, transportation, energy and environment, this can be considered a good signal. Especially

Table 1. GHG emission reduction targets by sector established by the Brazilian Government during COP15.

Mitigation actions	2020 trend mi tCO ₂ eq(C)	Magnitude of reduction (by 2020) mi tCO ₂ eq		Proportion of reduction (%)	
		A	B	C	D
Land use	1084 (295)	669	669	24.7	24.7
Deforestation in the Amazon (80% reduction)	564	564	20.9	20.9	
Deforestation in the Cerrado (40% reduction)	104	104	3.9	3.9	
Agriculture	627 (170)	133	166	4.9	6.1
Restoration of pastures	83	104	3.1	3.8	
Crop and livestock integration	18	22	0.7	0.8	
No-till farming	16	20	0.6	0.7	
Biological nitrogen fixation	16	20	0.6	0.7	
Energy	901 (245)	166	207	6.1	7.7
Energy efficiency	12	15	0.4	0.6	
Increase biofuel use	48	60	1.8	2.2	
Expand the power supply by hydroelectrics	79	99	2.9	3.7	
Alternatives fuels (smalls hydroelectrics, wind and bioelectricity)	26	33	1.0	1.2	
Others	92 (25)	8	10	0.3	0.4
Metallurgical industry: replace coal from deforestation for planted forests	8	10	0.3	0.4	
Total	2703 (736)	975	1052	36.1	38.9

A and C: Values on columns measured based on a scenario of 36% of national emissions reduction, as stated by the National Policy for Climate Change.
B and D: Values on columns measured based on a scenario of 39% of national emissions reduction, as stated by the National Policy for Climate Change.
The values on millions of tons of CO₂ (mi tCO₂eq) are estimated for 2020.
Data from [102].

acknowledging the part of deforestation emissions reductions on the overall target, this could be a signal that right now the Brazilian Government understood the relations between the different sectors and decided to intervene in order to have accomplished its goals and avoid conflicting views, which have caused some constraints among different ministers in the past.

Currently, the REDD+ debate in Brazil is taking place among different levels of governments, private sectors, social movements and NGOs. The federal government

created working groups with different sectors of society to discuss the basis for a National REDD+ Strategy and last year the House of Representatives was debating a proposal to regulate a Brazilian trade scheme for REDD+ credits (to be continued this year under Project of Law 195/2011). In addition, there are several REDD+ pilot projects currently in development in the country [11,18].

Table 2 presents the projects in more advanced stages of implementation. Other projects are still in a preliminary stage of development, with technical and methodological

Table 2. Reducing Emissions from Deforestation and Forest Degradation projects in Brazil under designing or implementation phases.

Name of project/location	Responsibles/proponent institution	Biome	Development level	Area (ha)	Estimated reduction
Acre State Carbon Project, Acre	The Acre State Government/WWF Brazil, IUCN, GTZ and Instituto de Pesquisa Ambiental da Amazônia	Amazon forest	Under public consultation	5,800,000	In 15 years: 62.5 million tCO ₂ e; per year: 4,167,000 tCO ₂ e
Ecomapuá Amazon REDD Project/ Island of Marajó, Pará	Ecomapuá Conservação LTDA, in partnership with The Amazon Sustainable Institute Amazônia (São Paulo)	Amazon forest	Initial	94,171	300,000 tCO ₂ e/year
REDD Project for smallholders producers from the Amazon (avoided deforestation on small rural properties in the region of the trans-Amazon highway)/among the cities of Senador José Porfírio, Pacajá and Anapú and Pará	Instituto de Pesquisa Ambiental da Amazônia, Fundação Viver, Produzir e Preservar and Fundo para a Biodiversidade	Amazon forest	Under review at the Amazon Fund	31,745	In 10 years: 3,136,953 tCO ₂ e
Juma Reserve REDD Project/Novo Aripuanã municipality and Amazonas	Fundação Amazônas Sustentável/ the Amazon State Government	Amazon forest	Validated under CCB standards and in validation under VCS	Approximately 590,000; avoided deforestation area by 2050: 62% = 366,000 ha	By 2050: 189,767,027 tCO ₂ e; certified credits (2006 -2016): 3,611,723 tCO ₂ e
Conservation of the Atlantic Rainforest; Pilot Project for reforestation in Antonina; The Action Project Against Global Warming in Antonina/ Antonina and Guaraqueçaba, Paraná	Sociedade de Pesquisa em Vida Selvagem e Educação Ambiental/technical and accounting assistance	Atlantic rainforest	Under implementation	8600; 3300; 6700	Total in 40 years: 181,095 tCO ₂ e; 65,456 tCO ₂ e; 137,713 tCO ₂ e
Suruí Project, indigenous territory Sete de Setembro, the municipalities of Cacoal and Espigão d'Oeste, Rondônia and Rondolândia, Mato Grosso	Metareiládos Association, Kanindé/Forest Trends and IDESAM (technical support)	Amazon forest	Initial	248,000	In 44 years: 16.5 million tCO ₂ e; 375,000 tCO ₂ e/year
Genesis REDD Project/ located in Serra do Lajeado Environmental Protected Area, district of Taquareussu, Tocantins	Instituto Ecológica/Cantor CO ₂ e	Cerrado	In validation under CCB standard	121,415	In 20 years: 57,389 tCO ₂ e; 2869 tCO ₂ e/year

CCB: Climate, Community and Biodiversity Project; GTZ: Deutsche Gesellschaft für Internationale Zusammenarbeit; IDESAM: Instituto de Conservação e Desenvolvimento Sustentável do Amazonas; IUCN: International Union for Conservation of Nature; REDD: Reducing Emissions from Deforestation and Forest Degradation; VCS: Verified Carbon Standard; WWF: World Wildlife Fund for Nature.
Adapted with permission from [18].

issues still being defined, such as the Pilot REDD Project in Northwestern Mato Grosso (being developed in partnership with Mato Grosso State Government, TNC Brazil and Instituto Centro da Vida); the Calha Norte REDD Project, in Pará State (being developed by State Environmental Agency of Pará State, Conservation International Brazil and Instituto do Homem e Meio Ambiente da Amazônia); the Apuí Greener (Apuí Mais Verde, in Portuguese) in Amazonas State (being developed by IDESAM and the Apuí Environment Secretariat); the Registry of Social-environmental Responsibility for Xingu River Region, in Mato Grosso State (being developed by Aliança da Terra [Land Alliance] and the Amazon Environmental Research Institute); and the São Félix do Xingu Pilot Project in Pará State (being developed by Pará State Government, the Municipal Government of TNC Brazil). Each project uses different methodologies and criteria to calculate carbon stock and payment values. Moreover, Brazil already had a multistakeholder experience, which can serve as an example for designing a REDD+ regime. The Proambiente Program was developed by Amazon social movements in collaboration with NGOs and government agencies, and implemented between 2004 and 2007 as a federal public policy. It aimed to implement a payment for environmental services mechanism with improvement of local governance, diversification of production systems and maintenance of forest cover. One point that makes the program a source of experiences for the design of REDD+ regime is its bottom-up characteristic, elaborated by the social movements and NGOs, and then turned into a public policy. Also, all participants had to prepare themselves and pass through different phases to receive payments. These phases involved the construction of the involved families' commitment in elaborating utilization plans and stipulating targets of current and future land use plans. It also includes the collective agreement with annual targets to implement their utilization plan and to get certification, conditioning payments. The program also invested in capacity building of both farmers, extension agents and technical assistance in agroecology. The Proambiente program ended with problems related to a lack of stable financial support and linkage between forest products and markets. However, from this experience it is possible to learn that a careful long-term design of performance-based regimes, with investments in forest governance, forest-based economic development and organizational capacity building, connected to deforestation reduction targets, can play a decisive role in stopping the trend towards forest degradation and deforestation [107].

Back to the international scene, the Cancun agreements, which have particular decisions for the REDD+ mechanism under the AWG-LCA text, grant an enormous potential for Brazil to progress on the REDD+

subnational programs connected to a national structure. Under this logic, the main points were to establish plans to reduce deforestation and forest degradation in the Amazon and Cerrado, and to engage civil society on the process of development and implementation of REDD+ activities with social and environmental safeguards.

Brazil is without a doubt one of the countries most suited for REDD+ to be implemented quickly and successfully. Furthermore, Brazil is poised to go beyond REDD+, changing the current system of agricultural expansion, from one based on deforestation and forest degradation, to one that creates conditions for forest protection and equitable distribution of benefits and income, while contributing to a new low-carbon economic development. If well implemented in Brazil, REDD+ could be a tool to change the dynamic of the international negotiations in a way that developed countries and even developing countries (India and China, for example) could be motivated to adopt their own targets. All the fundamental elements to make REDD+ a reality in Brazil are detailed in the next sections.

The Amazon Fund

The Amazon Fund, implemented by the Brazilian Government, can be considered the largest project of performance-based conservation finance and the most important REDD+ experiment in the world. As mentioned, the concept of the Fund was officially presented during COP12, in Nairobi, Kenya, in 2006 (and again in COP13, Bali, 2007). It has been considered in Brazil as a crucial component for the success of international negotiations on REDD+ and for implementation of the NPCC. Launched by the Presidential Act in August 2008, the Fund aims to use financial incentives to reduce, or even eliminate, deforestation and to promote the preservation and sustainable use of the Amazon biome [108]. The Amazon Fund is now supporting projects potentially able to control and reduce forest destruction at the same time as promoting the preservation and sustainable uses of the Amazon Biome. As a private fund, the Amazon Fund is operated by the Brazilian National Economic and Social Development Bank (BNDES), following the principals and criteria established by the Amazon Fund Steering Committee (COFA). Here there is a more general concern about the structure in which the Fund is inserted: while the Amazon Fund is playing a major role in promoting REDD+ programs and projects in Brazil, there is a vast bulk of BNDES funding that supports agribusiness investments in Cerrado/Amazon biomes into grains and cattle (without promoting safeguards to avoid the purchase of those products from areas of deforestation, including indigenous lands, in some cases) [19,20]. This has been appointed by Brazilian civil society as one of the main changes that BNDES needs to focus in order

to present some coherence between its investments and the sustainable development the Bank intends to promote through the Amazon Fund. The bank has also been appointed to be the administrator of other funds, such as the National Fund for Climate Change (FNMC, the financial instrument to support NPCC) and other south–south cooperation activities relating to biodiversity and sustainable development. Besides this concern pointed out above, two other main concerns are on the agenda of civil society representation in the COFA, since the committee creation: transparency in the allocation of resources and access to fund's resources by local organizations. Considering these points, supported projects should advance on four goals: contribute to the conservation of public forests and protected areas; promote the sustainable economic activities based on forest products; promote the scientific and technological knowledge for the sustainable use of biodiversity; and enhance institutional development in order to promote forest management.

The amount of financial resources accessed from the Fund is calculated proportionally to the reduction of deforestation rate (validated annually by the Amazon Fund Technical Committee) below the historical deforestation rate (19,500 km², average for 1996–2005 period, to be updated every 5 years, and considering a fixed value of 100 tons carbon/ha). The Fund received its first donation of \$110 million from the Norwegian government in 2009 and a second donation of \$160 million in 2010. Norway's total donation is estimated to reach \$1 billion by 2015 (this will be determined by the effective level of deforestation rates reductions) [109]. More recently, the German government donated €21 million to the Fund. The Fund has so far contracted 13 projects [110].

However, to be a successful model for how REDD+ can be used as a mechanism to protect human rights, create a new economic logic based on the forest conservation, protect the ecological and climate functions of the tropical forests, and effectively contribute to climate change mitigation, the Fund must make three fundamental improvements: be linked to emissions reductions; demonstrate clear guarantees that the project will promote an equitable distribution of benefits to those stakeholders involved with forest conservation and deforestation reduction; and address the drivers of deforestation (agricultural and livestock expansion). Although the first recommendation appears to contradict the goal of the Amazon Fund, in fact, the Fund does not currently demand that submitted projects show their contribution to deforestation reduction. For the REDD+ mechanism, however, the projects need to prove their contribution to emission reductions. The second recommendation depends on the COFA to establish the 'priority criteria' to be applied to submitted projects, such as recommending that projects must consider the 'diversity of

stakeholders' involved in the proposed activities [111]. So far, there are no guarantees that projects submitted to the Fund will follow the recommendation to prioritize stakeholder diversity. If there is no obligation to demonstrate the relationship between project actions and deforestation, as demanded by the REDD+ mechanism, it will be hard, or at least, not mandatory, to identify those stakeholders deeply involved with forest conservation or deforestation reduction. For example, in the Brazilian Amazon approximately 32% of the total forest carbon stock (approximately 15 billion tons of carbon) is in the hands of local communities (rubber tappers, for example) and indigenous people. They are key stakeholders in the process to reduce deforestation and increase forest preservation, but there is no clear mechanism established by the Fund to prioritize projects submitted by them.

Two other important recommendations are related to 'financial leakage' and deforestation leakage to other biomes (e.g., Cerrado). Financial leakage could occur when the resources coming from the Fund (i.e., donations) are partially or entirely replaced by governmental (states or federal) funds currently allocated for deforestation control. The Amazon Fund's resources should then become additional to those provided by the government. Also, it will be necessary to ensure that projects supported by the Fund are not displacing the deforestation from the Amazon region, promoting leakage to other biomes. For example, in Brazil, there is an assumption that it is possible to stop deforestation in the Amazon because there is a large area available for agriculture and cattle ranching expansion in the savanna biome (Cerrado). However, new data from the National Institute for Space Research, Brazil, demonstrates that current deforestation in Brazilian savannas is equivalent to that occurring in the Amazon and that deforestation has been reduced in all Amazon states simultaneously. The leakage for the savanna biome can be controlled by the expansion of the monitoring system of deforestation and could provide some tools to measure leakage among biomes. Finally, one additional recommendation is to guarantee the link between projects submitted to the Fund and current public policy to control deforestation. At the federal level, the Amazon Fund is considered to be part of the federal Plan to Control and Combat Amazon Deforestation, executed by the Ministry of Environment. Through this plan, deforestation in the Amazon region would be controlled through investment strategies and actions to solve land tenure issues, credits for sustainable production activities, and reconversion of degraded lands for agriculture, establishment of protected areas, sustainable forest management and satellite deforestation monitoring. We believe this is a good way in which deforestation can be controlled and reduced. As we have pointed out before, a great part of the deforestation reduction achieved in the

last years in Brazil is attributable to large-scale creation of new protected areas on the frontier, in addition to command-and-control measures. In light of this, Brazil needs to develop incentive mechanisms for forest protection and promote law enforcement in order to sustain the reductions in deforestation achieved. In this sense, we believe that many more projects approved by a federal institution will need to ensure that benefits actually reach people in the forest and on the agriculture frontier, that is, those who have been promoting those changes for reducing deforestation. The Amazon Fund has a great role to play in it, if it is restructured in a way to organize and promote REDD+ projects and programs in order to achieve these accomplishments.

National Policy for Climate Change

As a consequence of the implementation of the Amazon Fund, the ongoing success in decreasing the Amazon's deforestation and increasing civil actions against deforestation, the Brazilian government made its most important decision in favor of climate change mitigation: the announcement at COP14, in Poznan, in 2008, of Brazil's commitment to reduce Amazon deforestation by 70% by 2017, a commitment subsequently revised to 80% by 2020. At COP15 in Copenhagen, 1 year later, Brazil announced its national commitment to reduce GHG emissions from 36 (1.2 PgCO₂) to 39% (1.3 PgCO₂) below business-as-usual levels (**Table 1**) and the National Congress has transformed into law the NPCC, which includes the GHG emission reduction targets announced in Copenhagen. Last year, during COP16, the Brazilian government announced that NPCC was turned into a decree no. 7.390, establishing an absolute limit for national emissions (3.2 PgCO₂ for the year 2020). The 2020 deforestation reduction target in the Amazon and Cerrado, together, account for 0.9 GtCO₂eq per year, that is, 70–76% of the total (depending on the scenario adopted). This indicates that if Brazil is willing to meet national reduction targets stipulated by Law and Decree, plenty of work will need to be done under the REDD+ mechanism. This re-emphasizes the importance that REDD+ plays in Brazil and how that decision will impact the international negotiations on climate change.

The NPCC is basically supported by the National Plan for Climate Change and by the FNMC. The NPCC also makes reference to the use of existing financial and economic mechanisms to climate change mitigation under the UNFCCC, but does not exclude other potential mechanisms nationally established. The main actions of the National Plan are related to: the implementation of the National Public Forests Register that proposes to reduce the deforestation and illegal occupation on non-destined forested areas; the improvement of the Action Plan for the Prevention and Control of Deforestation

in the Legal Amazon Region [112]; implementation of the Deforestation Monitoring Program for all Brazilian biomes, as already implemented in the Amazon region; improvement of the capacity for enforcement; and the Amazon Fund. The FNMC has \$625 million to be expended in 5 years and can provide financial support to educational activities on climate change, analysis of vulnerability, impacts and adaptation, projects to reduce GHG emission from industries and deforestation, development of new clean technology, research on carbon inventories, support to nontimber production system, payment for environmental services to communities and individuals that contribute to carbon storage, development of agroecological systems to make forests profitable and for the recuperation of degraded lands.

Considering the historically conservative position of the Brazilian government on restricting deforestation as a valid action against climate change mitigation, the NPCC represents a tremendous advance in helping the world to face both climate change and the loss of tropical rainforests. Its success, however, depends on how it will be implemented by the government. The implementation plan of NPCC is based on two phases. In the first phase, prior to the launch of the Brazilian second national report of GHG emissions [113], the Brazilian government announced five sectorial plans to reduce emissions: the action plan to prevent and control deforestation in the Amazon (80% of reduction by 2020 in relation to the average between 1996 and 2005); the action plan to prevent and control deforestation in the Cerrado Biome (40% reduction by 2020 of deforestation in relation to the average between 1999 and 2008); actions for the agricultural sector (such as restoration of currently degraded pastures, promotion of crop–livestock–forest integration, expansion of no-tillage and nitrogen fixation); actions for the energy sector (i.e., improvements on energy efficiency and the use of renewables); and emission reduction by the metallurgical sector (e.g., replacing coal from deforestation for planted forests). In the second phase and after the publication of the national report, the government has promised to implement seven more plans for other sectors, such as transportation, manufacturing industry and consumer durable goods industry, fine chemicals and basic industry, pulp and paper industry, mining, construction industry and health services. The goal was to include all sectors in the elaboration of plans, however, only the agricultural plan was truly elaborated with an organized participation of representatives from the Brazilian society.

The NPCC implementation, however, will face some additional difficulties, considering that the Brazilian government is planning to increase the agricultural production and area under cultivation over the same period (by 2020) [114]. Also, the investments in infrastructure

planned by the Growth Acceleration Plan have few environmental safeguards and could increase the profitability of deforestation-dependent activities by lowering the costs of transportation, storage and energy [115]. In addition, the proposed changes in the Forest Code represent a threat to the accomplishment of the NPCC target, through the reduction of the areas of permanent preservation and legal preserves. These changes are under discussion in the Senate and will be voted in the next few months.

Brazil's large rural credit system has not yet incorporated the principles or goals of reduced emissions development. The NPCC must also engage the main industrial sectors and organizations that are either driving deforestation or defending forests. In particular, the buyers of agricultural commodities and beef must extend the initial trend towards the exclusion of Amazon deforesters from their supply chains into the Cerrado, and embrace a strategy that channels the nation's agricultural and livestock production growth onto existing cleared lands. This transition is technically feasible and can be achieved with the right set of incentives [15]. There are nearly one million Amazon smallholder families in Brazil, which is another important sector to understand and support a low-emission development path. As deforestation rates from large-scale forest conversion to pasture and mechanized croplands diminish, smallholders will continue to maintain their semi-subsistence households through slash-and-burn agriculture, unless they can develop low-deforestation alternatives. In other words, without rapid progress in the development of viable economic alternatives to forest clearing, Amazon smallholders will need to clear a minimum of 6000–8000 km² of forest per year, preventing Brazil from reaching its 2020 target of 4000 km² per year of Amazon deforestation. Indigenous and traditional people are less numerous than smallholders (a total of approximately 70,000 families), but they occupy and defend more than 40% of the region's remaining forests and 30% of remaining forest carbon stock [21]. They insist upon greater engagement in the REDD+ debate in national and international realms, and are developing strategies for adapting to climate change. In addition, despite the growing engagement of their leaders in the REDD+ debate, there is still a critical need for a better understanding of what REDD+ (and climate change) is, getting this knowledge down to the local level and moving beyond the view that REDD+ is a system of direct payment to stakeholders.

Many of Brazil's policies and programs that represent threats to the NPCC are designed to support Brazil's ascendancy as the new global agricultural superpower. The Brazilian agro-industrial sector, which represents a third of the nation's GDP, plans to rapidly increase agricultural and livestock production by 2020, potentially

coming into direct conflict with the federal government's efforts to slow forest and savanna conversion to crops and pastures within the NPCC. Agro-industry's plans are already attracting substantial flows of private capital into Brazil for land acquisition [21], infrastructure improvement (roads, highways and waterways), storage facilities and port improvements. The Brazilian Growth Acceleration Plan has targeted similar investments as key features of Brazil's economic growth, and has already channeled more than \$103.3 billion towards energy and infrastructure projects. In a related threat to the NPCC, agro-industry and the ruralist lobby have launched a sophisticated strategy to remove restrictions on forest and savanna clearing on private land that are contained within the Forest Code. The Brazilian Forest Code stipulates that landholders in the Brazilian Amazon forest region must maintain 80% of their land in forest, those in the Cerrado must maintain 20% in native vegetation and those in the Atlantic Coastal Forest are prohibited from clearing any forest on their land. The Code also established into law the forest protection of riparian zones, the called areas under permanent protection. The attacks on the Forest Code are more sophisticated than the perpetual threats the law has suffered in the past. They include a large number of public hearings, media campaigns and other political maneuvers. For example, some members of the lobby have endorsed a zero deforestation policy for the Amazon as they try to eliminate restrictions on clearing in the Cerrado.

Brazil's ambitious agricultural agenda is reinforced by global trends in agricultural commodities markets. Recent UN-Food and Agriculture Organization and World Bank analysis has concluded that the world food supply is moving into a long-term trend of higher prices for food commodities, driven by the diminishing potential for agricultural expansion in temperate zones, growing demand for animal feed in emerging economies, higher oil prices and the expansion of biofuel production [22]. Given Brazil's governance capacity, its sophisticated agroindustrial sector and 'available' arable land (much of it under forest or Cerrado vegetation), it is assumed (and hoped) by many that Brazil will supply more than half of the increase in global demand for food and biofuel commodities by 2020, doubling the area it currently uses for agricultural production to over 100 million ha (according to soy producer lobbying group Aprosoja).

These seemingly insurmountable threats to the NPCC can be addressed in the context of a national strategy that emphasizes carefully planned expansion of sugar cane, soy and other crops, onto land that has already been cleared for cattle pasture. This strategy must align the economic and political ambitions of the agricultural sector with the commitments announced

by the federal government in Copenhagen and achieve a low-emission land-use trajectory through a suite of incentives and policies.

In sum, while the threats are significant and must not be underestimated, there is also an enormous opportunity for Brazil to consolidate the NPCC, take deforestation to zero over the next 10 years and to leverage this Amazon transition to support a nation-wide, low-emission development model. This is especially valid if we consider the decisions taken in Cancun related to REDD+ that describe the intentions of granting financial and technical support to developing countries for developing national strategies or actions plans to reduce deforestation. Paragraph 71 of the Outcome of the work of the AWG-LCA clearly shows a clear request for developing countries to develop national strategies or action plans to reduce emission from deforestation and forest degradation, and to promote the conservation and the enhancement of carbon stocks and the sustainable management of the forest in "the context of the provision of adequate and predictable support, including financial resources and technical and technological support to developing country Parties". In this sense, the Brazilian NPCC could clearly receive support to be developed and implemented in a participative way. Paragraph 72 of the same text also highlights the importance of when developing and implementing these national strategies or action plans to ensure "the full and effective participation of relevant stakeholders, inter alia, indigenous peoples and local communities".

The Amazon states' plans for deforestation reduction

As a consequence of the Plan to Control and Combat Amazon Deforestation and the results of the task force initiated by the Amazon Governors Forum, Brazilian Amazon states are now implementing their own programs to prevent deforestation (PPCD), in an effort to reduce GHG emissions. By doing this, they are empowering themselves to participate in the Amazon Fund and have access to votes on decisions taken by the COFA.

Since 2008, seven (of nine) Amazon states have initiated their plans (Amazonas, Para, Mato Grosso, Acre, Tocantins, Rondonia and Amapa). The states of Amazonas, Para, Mato Grosso and Acre had already established their own voluntary targets for reducing deforestation in connection with the goal proposed by NPCC in the Amazon region. The states' plans to reduce emissions from deforestation are enabling the creation of a subnational structure to deal with the opportunity offered by REDD+. The State laws, the coordinated action by plans involving different state actors, and joint actions such as the one undertaken in partnership with state governments of other countries (Indonesia and

California) through the GCF are working on what can be identified as the basis of a joint REDD+ regime that could work as a platform for a national REDD+ scheme. The details and progress of state plans to control deforestation and REDD+ are listed in the **Table 3**. Together they comprise approximately 80% of GHG emissions from Amazon deforestation.

There is a growing consensus among state governments that they need to establish standards to measure emissions from deforestation and to registry the avoided emission, in preparation to the future federal regime for REDD+. These standards and registry mechanisms have been understood as fundamental to attract potential investors in REDD+ (and avoid double accounting) and reduce the leakage, which contributes to the positive scenario for a REDD+ system development, which represents a good sign towards a REDD+ regime consolidation.

However, one challenge to the effectiveness of the plans is the political disruption caused by officials change after the 2010 elections. Every 4 years, the new officers tend to ignore previous policies and create new ones, disrupting all the processes of policy implementation and consolidation. Associated to that, the recent reduction in the deforestation rates from 2006 to 2010 has created a fictitious belief that deforestation is controlled, which can cause a relaxation in policy enforcement, resulting in an increase of deforestation again. Therefore, the Amazon states' plans for deforestation control must be reinforced and supported by the Brazilian government.

National REDD+ regime in Brazil: the current debate & a proposal

As mentioned previously, Brazil contains the fundamental elements necessary to establish a national REDD+ regime. These include the world's most sophisticated system of deforestation monitoring, created by the National Institute for Space Research [116], a national legislation for climate change (NPCC) that establishes targets for GHG emissions, international and domestic legislations that recognize and protect the rights of indigenous peoples [23–28], a forest code [29] and other important laws that regulate Conservation Unities, the management of Public forests [30,31], the protection of forests and native ecosystems in 'permanent preservation areas' (e.g., steep slopes and riparian zones) and the legal preserves (a percentage of all properties designated to forest maintenance) [29]. In addition, there is in Brazil a discussion on financial mechanisms (funds) to support mitigation actions against emissions from deforestation (for example, The Amazon Fund and the National Fund for Climate Change), and a society engaged enough to request actions and policies from the

Table 3. Brazilian Amazon State Plans for deforestation reduction.

Amazon state	Baseline	Reference period	Estimated avoided emission	Strategy
Mato Grosso	1996–2005 (7675 km ²)	First period (2006–2010): 60% reduction Second period (2011–2015): 77% reduction Third period (2016–2020): 89% reduction	110 GtCO ₂	As a result of meeting these goals, the State of Mato Grosso could legally deforest up to 17,000 km ² between 2009–2020, keeping gas stock of forest approximately 300,000 km ² .
Pará	1996–2005 (6169 km ²)	First period (2006–2010): 42% reduction Second period (2011–2015): 66% initial baseline or 42% in relation to the first period Third period (2016–2020): 80% initial baseline or 42% in relation to the second period	583 million tCO ₂ e	If the State of Pará meets these targets, it would be responsible for 30% reduction of all deforestation reduction under NPCC, which would prevent the emission of 583 million tCO ₂ e
Amazonas	1996–2005	First period until 2010: 38% reductions in subsequent years, to stabilize the deforestation rate in 350 km ² (maximum)	158 million tCO ₂ (by 2020)	Achieving the target proposed by 2020, the State would provide a reduction in deforestation of 158 million of CO ₂ , ensuring the maintenance of more than 1.33 million km ² of forest standing. This stock represents forest more than 40% of the entire Amazon Rainforest remnant, with a restored 50 billion tCO ₂
Acre	1999–2008 (530 km ²)	First period (2009–2018): 75% reduction	14 million tCO ₂ (by 2018)	The State of Acre aims to achieve these goals gradually, considering that since 2006 a reduction in the rate of deforestation has already occurred and that some of the State of Acre programs were already underway, such as the Program of Forest Plantation, which is part of the Policy of the Environmental Forestry Asset Valuation, launched in September 2008

government [106]. Some of the above aspects are present only in Brazil, such as the capacity to monitor deforestation, the legislation on indigenous rights, the engagement of civil society, the development of a set of social and environmental principles and criteria to REDD+ activities. Even countries, such as Costa Rica, Vietnam and Mexico, which are actively engaged in REDD+ and already have some REDD+ programs established, do not present all of those elements, which are fundamental to the development of an internal REDD+ regime.

All of the above mentioned elements, but in particular the actions taken by the Amazon states, and the federal administration, more specifically, the Brazilian Ministry of the Environment, have supported a process for elaborating a REDD+ strategy in Brazil. This initiative was intended to promote discussions on the basis of the future National REDD+ Policy with the governmental departments and agencies, civil society's organizations, social movements, research institutes and the private sector. In order to organize these discussions, the Ministry of the Environment promoted general meetings with representatives of social sectors and

the government from July to November 2010. Three working groups were formed to debate on institutional arrangements, mechanisms of benefit distributions and safeguards, and financial mechanisms. In addition, a special working group with experts on climate change and carbon market issues was also created. These three groups were charged with the task of developing the main elements for the establishment of national strategies for REDD+. The outcomes of this process resulted in three documents with recommendations and analysis from each group that was presented in November 2010. The information provided by the Ministry of the Environment is that the main results of this process will be published by the Ministry of the Environment soon. Those recommendations will then generate elements to the elaboration of the REDD national scheme. These working groups are expected to continue in 2011 until all the strategic components have been defined. So far, we have no clear indications that this will happen. However, decisions of the Cancun agreements for REDD+ indicate that this is another potential element that could receive funding. Multiple stakeholders and

Key term
<p>Stock flow and target: Approach developed by researchers from the Amazon Environmental Research Institute and Woods Hole Research Center describing possible ways of distributing potential incentive payments across countries to reduce emissions from deforestation and forest degradation. The premise of this approach is that the stream of revenues to provide positive incentives would come from the value at the going price of a country's carbon emission reductions, relative to a reference level set equal to average historical emissions (either through a market or from an international fund or a combination). In this way, countries receive compensation both for reducing emissions (avoiding physical depreciation of the carbon stock) and, through dividends, for maintaining existing stocks.</p>

policy working groups could receive further support by international financial institutions in order to make even a broader engagement of the civil society possible.

In parallel to the discussion at the governmental level, some proposals for a REDD+ regime in Brazil have been provided by different study groups [11,32]. The movements made by the Amazon states to independently pursue investments in their own REDD+ programs and projects have driven the discussion to the national level, in order to make feasible the compensation for the emission reductions from deforestation as a legitimate market instrument.

The Amazon Environmental Research Institute has also further developed the CR concept, proposing different institutional designs and benefit-sharing mechanisms to the development of a REDD+ regime in Brazil [11,117]. This proposal focus on the Brazilian Amazon and aims to accommodate revenues flowing from both regulatory markets and official development assistance funding, linking national, state and project-level REDD+ activities in an equitable, efficient and effective framework. The system is built in order to ensure that REDD+ benefits can flow from (Amazon) states historically with high rates of deforestation to those states with high stocks of forest (carbon) but with low rates of deforestation, mechanisms known as '**stock flow and targets**' approach for REDD+ [11,33]. In brief, the national system would compile the REDD+ state's systems (that would be responsible for certifying, registering and monitoring emissions reductions from deforestation and forestry inventory). The REDD+ state's systems would be operated by a State Agency of registry and each of these State Agencies would be under the regulation and monitoring of the federal government, through a 'federal system of REDD+', established in accordance with the purposes of NPCC and guaranteeing that REDD+ credits would never exceed the total amount of emissions reductions achieved. Each state could then issue REDD+ 'certificates' (C-REDDs) for key REDD+ projects and programs that would be equivalent to one ton of CO₂ per C-REDD certificate. C-REDDs would be negotiable in the voluntary market and exchangeable for REDD+ carbon credits within the evolving regulatory carbon markets. The C-REDDs and accompanying data would be registered in an official public system of each state that would

be integrated with the national REDD+ registry. The REDD+ projects and programs would qualify to receive C-REDDs if they followed and reinforced the REDD+ principles and strategies previously defined by the State REDD+ Plan, with the effective participation of forest stakeholders and benefit sharing. The volume of C-REDDs issued would be limited to the quantity of C-REDDs available for a given reference period (e.g., 5 years) to be determined by the federal government. C-REDDS would be issued on an ex-post basis after demonstrating that REDD+ activities have successfully avoided expected deforestation, calculated using an historical average (for this system, both the national and state targets were calculated using the same federal historical average of deforestation rate used by the federal government under the NPCC). However, incentives to reduce deforestation would be required to be implemented throughout the reference period. The allocation of C-REDDs to each state would be determined by performance, calculated as a combination of three variables: the state's forest carbon stock, the quantity of emissions reductions and success in achieving emissions reduction targets. The implementation of this kind of system could occur through four steps: accounting for emissions reductions from deforestation and forest stock in each state; converting reductions in emissions from deforestation into C-REDDs (a portion of the total emissions reductions from deforestation would be designated for inclusion in the regulatory carbon market); and distributing C-REDDs among states using the stock flow with targets approach [33]. Finally, the last step would be related to the Registering and Certifying REDD+ programs and projects. Each state would develop a system for certifying, registering, and controlling REDD+ projects and programs, using the principles and strategies developed by the State within their REDD+ plan. The federal government could establish an inter-ministerial process to engage civil society, other stakeholders and the states, to define the general principles for the state-level REDD+ strategies and the distribution of C-REDDs. These principles could include the definition of the ceiling of C-REDDs that could be allocated to states and the establishment of a buffer reserve against performance reversals.

This REDD+ system would create a decentralized framework for orchestrating and integrating REDD+ plans, programs and projects between the federal government, state government and civil society. At its core, this proposal defines national targets for REDD+, encourages states to develop REDD+ plans to achieve a portion of these emissions reductions, and allocates the flow of REDD+ benefits according to each state's forest carbon stocks, emission reductions and success in reaching emission reduction targets. For this system

to be effective in achieving the desired reductions in deforestation emissions, the state-level REDD+ plans must include programs and projects that provide effective incentives for traditional populations, indigenous groups, private property holders and others, looking for partnerships to provide technical and institutional support to traditional forest people participate effectively on the REDD+ plans.

The programs and projects developed must be aligned with the state-level policies for combating deforestation which, in turn, must support the federal NPCC and be consistent with the international decisions on REDD+ under UNFCCC regime. This would facilitate carbon market linkage with other fossil fuel-centered reductions regimes, such as the EU-Emission Trading Scheme, voluntary carbon markets, California's emerging CO₂ cap-and-trade program and a Brazilian domestic cap-and-trade system between the industrial states in the south and the forested states on the north (also under discussion).

In order to avoid financial and deforestation leakage, it is important that to have a monitoring, reporting and verification system (MRV), that includes mechanisms to avoid the replacement of government fund currently allocated for deforestation to REDD+ initiatives, as well as the investment in the expansion of the monitoring systems of deforestation to the Cerrado biome. The standards and registry mechanisms has also been understood as fundamental to attract potential investors in REDD+ (and avoid double accounting) and reduce the leakage.

Conclusion

Considering all the positive conditions discussed above, Brazil clearly has a unique opportunity to be seized quickly, if not the last one, in the development of a REDD+ regime. The country has the technical, political and financial conditions to develop a National REDD+ Regime. The existence of a system to monitor deforestation efficiently, a national legislation for climate change, including emission reduction targets, a national legislation to protect indigenous people and local communities' rights, a national legislation on conservation units and the Forest Code and an engaged civil society, are the key components to accomplish that.

In addition, the majority of the Amazon states have already elaborated their own REDD+ plans and programs, including targets, and the growing consensus among states governments that they need to establish standards to measure emissions from deforestation and to registry the avoided emission in preparation to the future federal regime for REDD+, contributes to a favorable political scenario for the development of a nested REDD+ regime in Brazil.

In terms of financing mechanisms, there are international funds that can contribute to the establishment of a REDD+ regime and national initiatives that can support a regime in Brazil, such as the Brazilian FNMC and the development of an internal cap-and-trade system among the States in the south and in the Amazon region.

Future perspective

It is important to recognize that the fight to save the Amazon forest is not in its final stages, but in its early stages. This means that the current phase is a historic moment, in which it is still possible to preserve and conserve over 80% of the original forest, while using 72.6 million ha (of which at least 15.2 million have been abandoned), that have already been deforested.

If we consider the international scene, with the recent decisions for the REDD+ mechanism under the UNFCCC, the recent progress on GCF, with the signature of a Memorandum of understanding between California, Acre and Chiapas, the various programs and Funds to provide incentives to countries to develop and implement a REDD+ national strategy, and the aforementioned elements already implemented, Brazil is arguably the best (if not the only) country to provide the basis for a national REDD+ scheme implementation in the near term; for example, the UN-REDD Programme, the Forest Carbon Partnership Facility and Forest Investment Program. That is why it is so important for Brazil to take the lead in international negotiations on REDD+ and also to start developing systems for sharing the benefits in an equitable and fair way.

Taking advantage of these opportunities will generate hope about the feasibility of its implementation and models that can serve as a basis by other countries. In this way, the efforts already initiated by Brazil in order to develop and establish a national system for accounting of emission reductions from deforestation and forest degradation, need to be connected with the subnational programs and REDD+ projects being developed and implemented. This connection needs to be presented in a way that measures emission reductions in real time, while simultaneously providing the benefits of the reduction to the relevant parties. In other words, the planning of a REDD+ national strategy should prioritize investments not only in programs of payments for environmental services, but also in other areas such as education, training and capacity building for people who have historically contributed to fighting deforestation and climate change. REDD+ resources will also be vital to changing the production systems especially in areas already cleared. For instance, these resources could be used to invest in technical assistance, policies of minimum price for forest products, infrastructure

and local adaptation actions to climate change. In addition, the development of a MRV system is fundamental to a REDD+ regime development, and to guarantee the fairness and effectiveness of the REDD+ regime. Brazil also has all the capacity to build an MRV system, with its capacity to monitor deforestation, the legislation supporting the monitoring quantitative and qualitative parameters, a principle and criteria well defined and a civil society exerting social control over the process.

The future challenges to establish a REDD+ regime in Brazil are already identified and they must be overcome for REDD+ to become a suitable and reliable mechanism. These challenges encompass: reinforce the commitment of State governors with State Plans for Deforestation Reduction and the targets assumed on this Plans; define land tenure rights and REDD+ credits ownership (titularity), to assure that REDD+ will not generate more dispute for land instead of solving old ones; establish a national MRV system for all Brazilian biomes, able to measure carbon emission reductions and to monitor all the forests and degradation in the Cerrado, Mata Atlantica, Caatinga and Pampas ecosystems, ensuring that there is no leakage from the Amazon to those biomes; secure funds to promote REDD+ globally and for a certain period of time. This might include connecting REDD+ to global carbon markets, since the

public funds have proven to be enough only for phase 1 and possibly phase 2 of REDD+, and establishing efficient mechanisms of safeguard for REDD+, in order to ensure that the rights and way of living of indigenous peoples and local communities are respected and that those communities are being properly informed, engaged and consulted about REDD+ programs and projects prior to them being developed.

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Executive summary

REDD+ in Brazil: the history

- The compensated reduction of deforestation has space on UN Framework Convention on Climate Change meetings and, since 2005, Brazil has been asked to take a position on the issue.
- The Brazilian government has changed its position towards a positive Reducing Emissions from Deforestation and Forest Degradation plus (REDD+) mechanism as a consequence of the advances achieved by the country in controlling and monitoring deforestation in the Amazon.

The Amazon Fund

- The Amazon Fund can be considered the largest project of performance-based conservation finance and the most important REDD+ experiment in the world.
- The fund is now supporting 13 projects potentially able to control and reduce forest destruction along with the promotion of preservation and sustainable uses of the Amazon Biome.

National Policy for Climate Change

- Brazil committed to reduce Amazon deforestation by 80% by 2020, under the National Policy for Climate Change.
- The policy predicts carbon emission reductions through actions on the agricultural, energy, metallurgical and land use sectors, based on a national inventory of emissions.
- The plan to increase the agricultural production and area under cultivation by 2020, to invest in infrastructure, in addition to the proposed changes in the Forest Code currently in debate in the Senate, are examples of the challenges faced by the National Policy for Climate Change.

The Amazon State Plans for deforestation reduction

- The seven (of nine) Amazonian States created Plans for deforestation reduction.
- The states plans are enabling the creation of a subnational structure to deal with the opportunity offered by REDD+.

National REDD+ regime in Brazil: the current debate & a proposal

- The plans to reduce deforestation in the national and state level, the REDD+ debate promoted by the government, and the REDD+ projects already in development, are constructing the foundation for a Brazilian REDD+ regime.
- The article presents a proposal of a REDD+ regime to the Amazon, which accommodates revenues flowing from both regulatory markets and Official Development Assistance funding, and links national, state and project level REDD+ activities using a stock-target and flow approach.

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