

REDD+ Initiatives in Brazil – How Global Climate Accords are reflected on the ground?

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Forest initiatives under the United Nations Convention on Climate Change (UNFCCC) and the Kyoto Protocol have so far proven insufficient to alter forestry practices in developing countries. Since 2007 parties to the UNFCCC have been negotiating policy approaches and positive incentives for Reducing Emissions from Deforestation and Degradation (REDD+) for the post-2012 (post-Kyoto) period. One hope lies in the Parties expanding the role of forestry practices in the climate regime through the creation of incentives for avoided deforestation and forest degradation, sustainable management of forests and conservation and enhancement of carbon stocks. The benefits of an expanded role for forestry practices extend beyond climate change mitigation to the valuation of ecosystem services and to the conservation and sustainable use of biodiversity. An assessment of the current global forestry regime and its impact on specific national policy contexts can assist in understanding and eventually surmounting the main challenges facing the implementation of REDD+ on the ground. This paper will analyze legal and political frameworks that are governing REDD+ initiatives in Brazil – the largest global emitter of greenhouse gases from deforestation and forest degradation. The analysis provides an overview of the contextual conditions that affect the REDD+ policy environment in the Brazilian Amazon, including the federalist governance structure, asymmetrical political power and developmental path dependency. Based on reviews of existing literature, national and international data, legal opinions and selected expert interviews and press coverage, it provides the background of the context in which national REDD+ strategies are being developed. Against this background, this article focuses on analyzing the current status of REDD+ initiatives and looks to possible constraints related to their success. With such an aim it will look at policy legitimacy, social impacts, legal and institutional options and constraints of a REDD+ regime in Brazil. The article concludes with policy options to guide formulation of an effective national REDD+ strategy for Brazil.

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Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) was opened for signature at the UN Conference on Environment and Development (UNCED) in Rio de Janeiro 20 years ago. Many Parties have ratified the Convention and its Kyoto Protocol up to now—with one prominent exception being the United States—and have thereby committed themselves to the reduction of greenhouse gas (GHG) emissions. This study aims at analyzing the implementation of actions to reduce GHG emissions from deforestation and degradation under the UNFCCC. The introduction of forest initiatives has always caused controversial debates between developing and developed countries and among advocacy groups—from indigenous and local communities to business and industry. In fact, the positions on including forest activities under the Kyoto Protocol at the international level were, and to some extent still are, highly polarized. While some representatives of developing and developed countries, scientists and many NGOs view reducing emissions from deforestation and forest degradation (REDD+) as an opportunity to reduce GHG emissions in a cost-effective way (Santilli et al 2005, IPCC 2007, Stern 2007), others regard the mechanism as one more mechanism to offset emissions from developed countries

that will not be able to deal with challenging issues of forest activities as leakage, reference levels, corruption, etc. Brazil, for example, has always been against REDD+ as a scheme that would allow developed nations to gain carbon credits by supporting forest conservation in developing ones. Nevertheless, there is now widespread acceptance that REDD+ in developing countries must form part of a post-2012 international climate agreement and requires international response. This policy field involves actors from various countries with highly divergent interests ranging from development aid, commercial interests in the logging and agro-industry, to pure research. In the current situation, only a number of disparate national and regional regulations address the issue but no international consensus exists so far.

During the second decade since the UNFCCC entry into force, however, mutual understanding within the international community, governmental and non- governmental, has grown. It seems that there is an increased awareness of the urgency of an internationally agreed approach to REDD+. So far, the implementation of REDD+ can be characterized as a pragmatic step-by-step approach that takes account of the existing different rationales and interests. What renders the REDD+ debate an interesting case of analysis is the fact that countries are now implementing different pilot projects and it is important to raise some points about the effectiveness of global accords on the ground. In addition, investments in REDD+ are increasing dynamically and quite rapidly putting up new challenges for political responses. Any international agreement on REDD+ will have to take account of these processes and divergent interests in its institutional design and be able to respond accordingly. An assessment of the current global forestry regime and its relations on specific national policy contexts can assist in understanding and eventually surmounting the main challenges facing the implementation of REDD+ on the ground. This paper will analyze legal and political frameworks that are governing REDD+ initiatives in Brazil – the largest global emitter of greenhouse gases from deforestation and forest degradation. While analyzing the Brazilian case we aim at improving coordinated international responses to national realities. Moreover, we will analyze which actors and networks were relevant in this policy arena and which factors influenced these developments.

The paper is structured as follows. Section 1 provides an overview of the contextual conditions that affect the REDD+ policy environment under the UNFCCC. Section 2 looks at the historical context of deforestation in the Brazilian Amazon, including the different national reasons of land use, such as the federalist governance structure, asymmetrical political power and developmental path dependency. Section 3 provides the background of the context in which national REDD+ strategies are being developed in Brazil. Against this background, section 4 focuses on analyzing the current status of REDD+ initiatives in Brazil and looks to possible constraints related to their success. The article concludes with issues that should be considered in the formulation of an effective national REDD+ strategy for Brazil.

I. Forest activities and REDD+ under the UNFCCC

The positive role of forests in mitigating climate change has been recognized widely since at least the 1950s (Southgate 1952). In the Declaration of the World Climate Conference in 1979, it was highlighted that deforestation and changes in land use are contributing to the increased amount of carbon dioxide (CO₂) in the atmosphere. In 1989, the Noordwijk Declaration on Atmospheric Pollution and Climatic Change¹ stressed the importance of sustainable forestry, reforestation, afforestation, and conservation activities. Shortly after the first assessment report of the Intergovernmental Panel on Climate Change

¹ See “Noordwijk Declaration on Atmospheric Pollution and Climatic Change”, Ministerial Conference on Atmospheric Pollution and Climatic Change, Noordwijk, 7 November 1989.

(IPCC), the Second World Climate Conference held in Geneva in 1990, called upon national governments to take measures to increase “sinks” of greenhouse gases. A more comprehensive and legally binding scheme to curb the Earth’s increased temperature was put in place in 1992, with the adoption of the United Nations Framework Convention on Climate Change (UNFCCC). Forest and forestry activities are implicitly addressed by this important multilateral environmental agreement, but it was not until the 1997 Kyoto Protocol to the Framework Convention that a more detailed and specific legal framework began to be shaped.

As already shown by Sampaio and Gebara (2011) forests and forestry activities experienced two distinct phases within the climate change regime. The first phase was characterized by the generic concepts of sink, reservoir, and source provided by the UNFCCC. The second phase is characterized by the more precise and specific notions of these terms provided by the Kyoto Protocol and subsequent Conferences and Meetings of the Parties.² The UNFCCC’s broad definitions for the terms sink,³ reservoir,⁴ and source⁵ subsumed the concepts of forest and forestry; and as a result, they supported forestry project activities during an experimental phase called Activities Implemented Jointly (AIJ) Pilot Phase.⁶ Legally, at least until the Kyoto Protocol, Article 4(1)(d) of the UNFCCC provided the formal connection between forests and forestry and reservoirs and sinks. This provision called on all Parties to promote the enhancement of sinks and reservoirs of GHG. Such broad definitions allowed for forests and forestry activities to be equated to reservoirs and sinks, or sources when disturbed (Sampaio and Gebara 2011).⁷

In practice, this is important because the broadness of the definitions in the period leading up to the Kyoto Protocol allowed for project-based activities beyond merely afforestation and reforestation practices (currently the only allowed activities)⁸ to include also conservation and sustainable forestry practices.⁹ While the Kyoto Protocol expressly embraced forestry practices, it narrowed the UNFCCC’s broad definitions of sinks, reservoirs, and sources.¹⁰ That was an important contribution, because soon thereafter, negotiators began shaping a more specific legal regime for addressing land use, land-use

² For a discussion of the importance of developing clear definitions for terms such as “forests,” “afforestation,” “reforestation,” and “deforestation”, see Robert T. Watson and David J. Verardo, “Preface to the Intergovernmental Panel on Climate Change (IPCC)”, IPCC Special Report: Land Use, Land-Use Change, and Forestry (LULUCF) – Summary for Policymakers, 2000, available on the Internet at <www.grida.no/publications/other/ipcc_sr/?src=/Climate/ipcc/land_use/index.htm> (last accessed on 15 March 2011).

³ See United Nations Framework Convention on Climate Change (UNFCCC), New York, 9 May 1992, in force 21 March 1994, 1771 UNTS 107, Art. 1(8) (“‘Sink’ means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.”).

⁴ See UNFCCC, supra, note 8, Art. 1(7) (“‘Reservoir’ means a component or components of the climate system where a greenhouse gas or a precursor of greenhouse gas is stored.”).

⁵ See UNFCCC, supra, note 8, Art. 1(9) (“‘Source’ means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.”).

⁶ See Decision 5/CP.1, Report of the Conference of the Parties to its 1st Session — Part Two: Action Taken by the Conference of the Parties at its 1st Session, under Paragraph 1 (b) of the Conference of the Parties, UN Doc. FCCC/CP/1995/7/Add.1, 6 June 1995 (“[A]ctivities implemented jointly should be compatible with and supportive of national environment and development priorities and strategies, contribute to cost-effectiveness in achieving global benefits and could be conducted in a comprehensive manner covering all relevant sources, sinks and reservoirs of greenhouse gases.”)

⁷ See UNFCCC, supra, note 8, Art. 1(9) (“‘Source’ means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.”); Lavanya Rajamani, “Re-Negotiating Kyoto: A Review of the Sixth Conference of the Parties to the Framework Convention on Climate Change”, 12 *Colorado Journal of International Environmental Law and Policy* (2000), 201, at 207 (“Forests can be sources, sinks, or reservoirs of [greenhouse gases].”).

⁸ See Decision 5/CP.1, supra, note 11 (deciding that activities implemented jointly “could be conducted in a comprehensive manner covering all relevant sources, sinks and reservoirs of greenhouse gases.”).

⁹ See Review of the Implementation of the Convention and of Decisions of the 1st Session of the Conference of the Parties – Activities Implemented Jointly: Annual Review of Progress Under the Pilot Phase, under Paragraph 13, UN Doc. FCCC/CP/1996/14, 4 June 1996 (reporting that there are five ongoing projects in forest preservation, restoration, or reforestation and four in afforestation).

¹⁰ See Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 10 December 1997, in force 16 February 2005, 37 *International Legal Materials* (1998), 22 *et seq.*

change and forestry (LULUCF).¹¹ The initial legal framework dealing with LULUCF was launched by Articles 3(3) and 3(4) of the Kyoto Protocol, followed by Decision 9/CP.4. At first, the Parties opted for limiting LULUCF activities to afforestation, reforestation, and deforestation practices.¹² Amidst intense political debate over conflicting interests,¹³ the Parties agreed upon additional activities at the seventh session of the Conference of the Parties (COP-7) in Marrakesh for domestic accountability of forest and forestry activities (Sampaio and Gebara, 2011).¹⁴

However, the inclusion of forest sinks in mitigation activities has been one of the most controversial issues in climate change negotiations: accounting for forest sinks was frequently viewed as a "loophole" policy to sidestep serious measures for emissions reduction (Mwandosya, 2000). Several parties stressed the potential risks of forestry projects: carbon removals by forests are considered to be only temporary. Moreover, the establishment of plantations could contribute to deforestation, loss of biodiversity and harmful impacts on local livelihoods. These risks and related scepticism have, to a certain degree, impaired the political process as well as the potential of forestry activities.

Due to the resulting methodological and technical uncertainties, negotiators had great difficulty in agreeing on a scheme to account for carbon sequestration by forests (Schlamadinger and Marland, 2000). Other opposed observers emphasised the risk of including forestry activities under the mechanism, saying that these could lead to the creation of neo-colonialist "Kyoto lands", characterised by the spread of commercial plantations to the benefit of large corporations (Dutschke, 2001; Kill, 2001). On the other hand some claimed that all types of abatement strategies had to be put in practice for lowering the costs of reaching emissions targets under the commitment period. It was also argued that emissions from deforestation were responsible for a significant percentage of overall global emissions and that Clean Development Mechanism (CDM) projects could work against this trend and bring financial incentives to conservation and rural development programmes (Fearnside, 2001; Klooster and Masera, 2000; Masera and Sheinbaum, 2000)

In the end, only Afforestation and Reforestation activities were identified as qualifying for CDM activities. The negotiation of modalities and procedures for forestry CDM took two years longer than for other CDM sectors (e.g., energy), which also caused some delay in investment in this sector. To address the "loophole" risk, negotiators limited the amount of allowable emissions reductions through forestry to 1% of countries' 1990 emissions for the first commitment period of the Kyoto Protocol.

The debate on forest activities under the UNFCCC, however, continued to grow in the following years after the Marrakesh Accords defined CDM activities. They started to gain more attention when afforestation and reforestation have showed to be the less developed ones in the CDM pipeline. It was then in 2003 that the first proposal to reduce emissions from deforestation and degradation was brought in to the table by a group of Brazilian environmentalists (Santilli et al 2005) under the argument that countries with undergoing or at risk of large-scale deforestation, such as Brazil, Indonesia, Bolivia,

¹¹ See Sebastian Oberthür and Hermann E. Ott, *The Kyoto Protocol: International Climate Policy for the 21st Century* (Berlin: Springer, 1999) at 9, 132 (suggesting that the issue of sinks was problematic in that there was little information available for the purposes of making a decision).

¹² See Kyoto Protocol, supra, note 15, Art. 3(3) ("The net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation.") Deforestation, when characterized as a LULUCF activity, refers to the practice of preventing or reducing deforestation. See Pedro Moura-Costa and Marc D. Stuart, "Forestry-Based Greenhouse Gas Mitigation: A Short Story of Market Evolution, 77 *Commonwealth Forestry Review* (1998), 191, at 191–192.

¹³ See Rajamani, "Re-Negotiating Kyoto: A Review of the Sixth Conference of the Parties to the Framework Convention on Climate Change", supra, note 12, at 223 ("At COP-6, the Umbrella Group argued in favor of including additional activities in the first commitment period. However, the AOSIS and the EU opposed it.")

¹⁴ See Decision 11/CP.7, Report of the Conference of the Parties on its 7th Session – Part Two: Action Taken by the Conference of the Parties (Volume I), under Paragraph 1(b) – (c), of the Conference of the Parties, UN Doc. FCCC/CP/2001/13/Add.1 (21 January 2002).

Peru, Columbia, and central African nations, have no incentive to reduce or avoid emissions from deforestation.

The concept of “compensated reduction” as proposed by Santilli et al (2005) was seen as a means of both reducing the substantial emissions of carbon from deforestation and facilitating significant developing country participation in the Kyoto Protocol framework. The idea was that developing countries that elect to reduce their national emissions from deforestation during the 5 years of the first commitment period (taking average annual deforestation over some agreed period in the past, measured with robust satellite imagery techniques, as a baseline), would be authorized to issue carbon certificates, similar to the Certified Emissions Reductions (CERs) of the CDM, which could be sold to governments or private investors. Once having received compensation, countries would agree not to increase, or to further reduce, deforestation in future commitment periods (provided that Annex I countries fulfill their obligations). A country that committed to reducing deforestation and was compensated, but instead increased deforestation, would take the increment increased as a mandatory cap in the next commitment period (Santilli et al 2005).

In December 2005, the Coalition for Rainforest Nations¹⁵ led by Costa Rica and Papua New Guinea presented a formal proposal for reducing GHG emissions from deforestation to the 11th COP and first Meeting of the Parties to the Kyoto Protocol (COP 11/MOP 1). It was finally in 2007, that negotiators agreed upon a draft decision on REDD sent to the COP-13 in Indonesia.¹⁶ Decision 1/CP.13 adopted the Bali Action Plan and in its article 1(b)(iii) expressly embraced economic instruments to foster REDD practices in developing countries.¹⁷ That resulted in the adoption by COP-13 of Decision 2/CP.13 specifically dealing with REDD, at this time without the plus (+).¹⁸ The decision called for policies and measures for positive incentives for avoided deforestation and forest degradation, and forest degradation in developing countries; recognizing the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries. During the COP 15, Decision 4/CP.15 built on methodological guidance for REDD activities, adding the plus (+) to the mechanism, which asks for co-benefits (e.g. poverty reduction, later guaranteed by safeguards) and requesting a set of actions from developing country Parties and relying on the technical guidance to be provided by the Intergovernmental Panel on Climate Change (IPCC) to strengthening the technical work required for a successful REDD+ regime.¹⁹

Since then, developing countries have been implementing pilot projects on REDD+ following few guidelines provided by the last UNFCCC decisions and in a country-based approach. Some countries are implementing their projects with the support of programs like the United Nations Program for REDD+ (UN-REDD+) and the World Bank Forest Carbon Partnership Facility, such as Vietnam, Peru, Cambodia,

¹⁵ Bangladesh, Bolivia, Central African Republic, Cameroon, Chile, Congo, Colombia, Costa Rica, Democratic Republic of Congo, Dominican Republic, Ecuador, El Salvador, Fiji, Gabon, Ghana, Guatemala, Honduras, Indonesia, Kenya, Lesotho, Malaysia, Nicaragua, Nigeria, Panama, Papua New Guinea, Paraguay, Peru, Samoa, Solomon Islands, Thailand, Uruguay, Uganda, and Vanuatu (see, <http://www.rainforestcoalition.org/eng/>)

¹⁶ See Reducing Emissions from Deforestation in Developing Countries: Approaches to Stimulate Action – Note by the Secretariat, 27th Session of the Subsidiary Body for Scientific and Technological Advice, Bali, Indonesia (2007 SBSTA Report) UN Doc. FCCC/SBSTA/2007/L.23/Add.1/Rev.1, 12 December 2007.

¹⁷ See Decision 1/CP.13, Report of the Conference of the Parties on its 13th Session – Part Two: Action Taken by the Conference of the Parties at its 13th Session, under Paragraph 1(b) (iii), of the Conference of the Parties, UN Doc. FCCC/CP/2007/6/Add.1, 14 March 2008.

¹⁸ Ibid.

¹⁹ Ibid.

¹⁹ See Decision 4/CP.15, Report of the Conference of the Parties on its 15th Session – Part Two: Action Taken by the Conference of the Parties at its 13th Session, UN Doc. FCCC/CP/2009/11/Add.1, 30 March 2010.

etc. Others, such as Brazil and Indonesia, are implementing REDD+ in a broader way, relying on voluntary donations from developed countries.

Many of the challenges facing CDM afforestation/reforestation projects are of concern to negotiators dealing with REDD+. In summary, they include: scope and scale for REDD+, financing and benefits distribution, monitoring, reporting and verification (MRV), environmental and social co-benefits (Verchot and Petkova 2009).

II. Deforestation governance in the Brazilian Amazon – Historical Background

The Amazon Basin comprises more than seven million square kilometres in seven countries. It includes a tropical rainforest biome of some 5.5 million square kilometres, about 60 per cent of which is within Brazil. The Amazon, however, and in particular the Brazilian Amazon, has suffered deforestation at an alarming rate, from the 1960s (after construction of the Brasilia-Belem Highway) and even more so from the 1970s onwards, largely consequent upon access provided by construction of the Trans-Amazonian Highway and of the highway linking the capitals of Mato Grosso and Rondonia (Highway BR-364).

Though there are some extensive areas of cerrado (savanna), most of the Brazilian Amazon is forested. However, by 2009 the forested area of 4 100 000 square kilometres had been reduced to less than 3 350 000 square kilometers (PRODES/INPE 2011). Additionally, research has indicated that the amount of forest seriously degraded by logging and fire is substantially larger than the amount of forest cleared (Souza et al 2009). Of special concern in that regard is that degraded forest has lower biological diversity, greater fire-proneness and greater susceptibility to clearing (Gerwing 2002).

Enhanced awareness of the importance of the Amazon has led to increasing recognition, within and outside Brazil, of the worldwide ramifications of preservation or destruction/degradation of the Brazilian Amazon rainforest. This has resulted in both international disquiet and increased international support, including financial and technological support, for action at both state and federal levels. Nevertheless, in Brazil as in many developing countries, there has been concern that international demands for environmental preservation of forest areas could threaten or diminish national sovereignty.

The vital importance of uncompromised sovereignty over its Amazon has consequently been ingrained in the policies of the Brazilian Government, in particular the Ministry of Foreign Affairs and — importantly, given the power of the military in Brazil throughout its history — the Ministry of Defence. The Brazilian armed forces themselves have seen the occupation and protection of the Amazon as the core of their role in the nation — and that mindset has been very broadly shared by the Brazilian people as well as the government.

This has impacted on Brazil's approach to international treaty proposals. In particular, it has been a key factor in Brazilian resistance to the assumption of international obligations in relation to deforestation or any other matter in which the international community could be seen to be impinging on Brazil's sole possession and ownership of, and sovereignty over, its Amazon region.

For example, this was a driver of Brazil's adamant refusal, at the United Nations Conference on Environment and Development ('UNCED') at Rio de Janeiro in 1992, to countenance a binding

international agreement on forests. The rather mild, non-binding 'Rio Forest Principles'²⁰ was the most that would be accepted by Brazil (and various other developing countries, including Indonesia, Malaysia and other significant rainforest nations) (Campos Melo 2000). To undertake concrete commitments was seen as potentially providing foreign powers with justification, or pretext, for occupation of economically and culturally valuable Amazonian areas or, at the very least, for international interference with Brazil's governance of its Amazon.

Processes of occupation of public lands in the Brazilian Amazon have been historically induced by incentives to clear forests as proof of 'productive' activity for purposes of concession of private title and access to public credit programmes. Within this context, social conflicts over access rights to land and other natural resources, involving a variety of newcomers (ranchers, speculators, migrant farmers) and existing populations, intensified during the 1970s and 1980s (Branford and Glock 1985, Hecht and Cockburn 1989, Millikan 1992). Throughout the late 1980s and 1990s conventional development paradigms predominated in the region, as exemplified by the creation of a series of export-oriented multimodal transportation corridors within the *Brasil em Ação* (Brazil in Action) and *Avança Brasil* (Advance Brazil) infrastructure investment programmes of the Cardoso administration (1994–2002). Development policies were largely maintained by the Lula administration (2003–2010), especially within the context of its Accelerated Growth Program (PAC).

Increasingly, deforestation trends in the Brazilian Amazon have been linked to globalised markets for beef, hides, timber, soybeans, biofuels and other commodities. Clearly, recent movements in deforestation rates are linked to fluctuations in commodity markets, especially for beef and soybeans as well as climatic factors. However, it may be argued that efforts undertaken by the Brazilian government, especially related to the creation of protected areas in regions such as along the BR-163 corridor and improved enforcement activities, have, at least temporarily, yielded positive results (Barreto et al. 2009).

In recent years, important progress has been made in Brazil regarding promotion of forest conservation and addressing the drivers of deforestation and degradation in the Amazon region. Conservation policies aimed at controlling and preventing deforestation in the Amazon underwent significant revisions during the 2000s, marked by two relevant turning points. First, the launch of the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (*Plano de Ação para a Prevenção e o Controle do Desmatamento na Amazônia Legal, PPCDAm*) in 2004 integrated actions across different government institutions and introduced innovative procedures for monitoring, environmental control, and territorial management (Maia et al. 2011, IPAM 2009). Second, as novel policy measures were implemented beginning in 2008, the targeting of municipalities with critical rates of deforestation became operationally viable and rural credit became conditional upon proof of the borrower's compliance with environmental regulations (Assunção et al 2012).

Recent research indicates that the conservation policies associated with these two turning points were effective at curbing deforestation rates in Brazil. Observed deforestation in sample municipalities totaled 57,100 square kilometers in the states of Pará, Mato Grosso, Rondônia, and Amazonas for the 2005 through 2009 period. In counterfactual simulations we estimate that, had the set of conservation policies implemented beginning in 2004 and 2008 not been introduced, this total would have instead equaled 119,200 square kilometers. Our results therefore suggest that these conservation policies

²⁰ UN General Assembly, Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests, A/CONF.151/26 (vol III) (14 August 1992).

avoided 62,100 square kilometers of deforestation, or 52.1% of the total deforestation that would have occurred in the 2005 through 2009 period if policies had not been adopted. Using the conversion factors of 10,000 tons of CO₂ per square kilometer and 5 US dollars per ton of CO₂ mentioned in MMA (2011), this avoided deforestation is equivalent to an avoided loss of 621 million tons of stored CO₂, which is valued at 3.1 billion US dollars (Assunção et al 2012).

The Brazilian government has more than 20 public policies intended to have positive impacts (direct and indirect) on climate change. Most of them are related to energy initiatives. The country's main challenge, however, is the problem of deforestation, responsible for up to 75% of Brazil's CO₂ emissions (MCT 2009). Currently, there are 2 macro policies for climate change in Brazil: the National Plan for Climate Change, approved in November 2008 and presented at COP 14 in Poznań, and the National Policy for Climate Change (PNMC), which was approved by the National Congress and signed into law by former President Lula in late December 2009. The former presents the status of initiatives in different sectors and possible mitigation and adaptation actions for them. It also addresses the issue of impacts and vulnerabilities associated with adaptation to climate change and outlines plans on research and development, education and instruments to implement actions. The PNMC provides specific actions to implement what is in the plan, including the creation of a national climate change commission and fund (the National Fund for Climate was established in December 2009); it also reiterates deforestation reduction commitments by 2020 made at COP 15 in Copenhagen (May et al 2011).

The PNMC, which includes the National Plan as one of its instruments, defines the objectives and guidelines for domestic mitigation actions. It enshrines in law the national voluntary commitment to reduce emissions, which could generate a reduction of between 36.1% and 38.9% on the projected emissions for 2020. The set of initiatives by Brazil involving emissions mitigation include combating deforestation and initiating alternative processes in the agricultural, energy and steel manufacturing sectors. Brazil's goal is to achieve an 80% reduction of deforestation in the Amazon²¹ and a reduction of 40% in the Cerrado²². The Plan and the PNMC will be analyzed in detail in the next section.

III – The REDD+ context in Brazil

The Brazilian federal government during the Kyoto negotiations in 1997 demonstrated opposition to inclusion of instruments to promote conservation of tropical forests and avoidance of deforestation for different reasons including sovereignty, technical issues and economic aspects. This opposition remained until recent years, but was the main reason for the creation of the Amazon Fund, once Brazil always advocated for a fund where developed countries would make voluntary donations to help developing countries reduce deforestation. In this context, emission reductions achieved are to be considered additional to emission reduction by developed countries (Brazil 2006).

As already mentioned, the REDD+ debate gained great attention after a proposal made by a group of Brazilian environmentalists to the UNFCCC for the creation of a mechanism, initially called 'compensated reduction', linked to international carbon markets that would reward verifiable reductions in CO₂ emissions from deforestation achieved by Brazil and other developing countries, given their contributions to addressing the global climate crisis. Based on satellite monitoring of deforestation, the proposed mechanism would involve the establishment of reduction targets and compensation for 'avoided deforestation' contingent upon verified reductions in annual clearing rates, compared with a

²¹ From the 1996-2005 average (19,535 km²).

²² From the 1996-2005 average (19,535 km²).

periodically adjusted historical baseline (Santilli et al. 2005).

After that, a group of 9 NGOs launched the 'Zero Deforestation Pact' in the Brazilian Congress, proposing a national commitment to reduce deforestation rates in the Amazon from 14 000 km² in 2005–2006 to zero in 2015, based on annual targets and a series of actions to strengthen forest governance in conjunction with state governments (with particular attention to improving licensing systems of rural landholdings), economic incentives directed towards reduction of deforestation and conservation of forests, creation and consolidation of protected areas, implementation of alternative settlement projects appropriate to the Amazon, and support for indigenous peoples. Based on the findings of an initial study (Young et al 2007), the signatory organisations estimated that R\$ 1 billion (approximately US \$588 million) would be needed each year to finance implementation of the pact, and called for the creation of a special 'Amazon Fund' to be created within BNDES (May et al 2011).

In August 2008 the President Lula signs Decree 6.527, creating the Amazon Fund (Fundo Amazônia) within BNDES. The Amazon Fund is conceived as a mechanism for receiving donations aimed at: i) management of public forests and protected areas, ii) environmental monitoring, control and enforcement, iii) sustainable forest management, iv) economic activities based on the sustainable use of forests, v) ecological-economic zoning, territorial management and land tenure regularisation, vi) conservation and sustainable use of biodiversity, and vii) rehabilitation of degraded lands.

Following these initiatives the Brazilian government launched the National Climate Change Plan during COP 14 in Poznan. In general terms, the plan calls for a 'sustained reduction in deforestation rates ... in all Brazilian biomes' with the overall goal of reaching 'zero illegal deforestation', albeit at an undetermined moment in the future. In particular, it establishes a goal of reducing Amazonian deforestation by 72% by 2017, in relation to a baseline of annual deforestation in the 1996–2006 period, resulting in a reduction of 4.8 billion tonnes of CO₂. An initial reduction of 40% would be achieved during the 2006–2009 period in relation to the 10-year 1996–2005 average. Additional reductions of 30% would be achieved in 2 subsequent periods, using an adjustable baseline. To achieve this goal, the Plan calls for implementation of the PPCDAM to be strengthened, especially within its 'sustainable productive activities' component. The plan also calls for the implementation of similar action plans in other Brazilian biomes, with improvements in capacities for monitoring deforestation and land use change.

The PNMC has benefited from work undertaken since 2004 under the Action Plan for Protection and Control of Deforestation in the Legal Amazon (PPCDAm) and has also provided incentives to launch a new plan focused on the Cerrado region - the Plan of Action to Prevent and Control Deforestation and Fires in the Cerrado Biome (PPCerrado). These plans are instruments in the PNMC. They also form part of the set of national strategies for biodiversity conservation, to prevent and reduce deforestation and promote the sustainable use of natural resources in these biomes.

In addition to these plans, the PNMC also provides for the elaboration of sector plans for mitigating and adapting to climate change. The Plan for Low Carbon Agriculture Emission (ABC Plan), for example, seeks to ensure continuous and sustainable improvement of management practices which reduce GHG emissions by the Brazilian agribusiness sector. The PNMC also provides financial mechanisms aimed at supporting the implementation of the planned initiatives, as the Amazon Fund (Fundo Amazônia) and the National Climate Change Fund (Fundo Clima).

Following these strategies, in 2010 the Ministry of the Environment launched a process to formulate proposals for a national REDD+ strategy that will be mainly based on PPCDAm, PPCerrado and ABC implementation. On top of that, Brazil's Investment Plan under the Forest Investment Program (FIP) was just endorsed (USD 70 million) and will have as focus the Cerrado biome and the implementation of different projects to support the ABC plan, to increase monitoring of fires in Cerrado, to generate information about the biome and support the implementation of the Rural Environmental Cadastre (CAR) in private properties.

The strategy aims at using these three plans (described and analyzed below) as central pillars for REDD+ implementation in Brazil. In parallel of that, the development of safeguards is under discussion with different actors of civil society. For that, the MMA held two meetings to include key stakeholders on the debate. The outcomes of these meetings, however, have pointed different challenges for the implementation of REDD+ and safeguards in Brazil, including: governance and participation (political will, dialogue, articulation of different levels); information and capacity building (informative workshops to local people, participation, monitoring and conflict resolution); working groups (to include different types of stakeholders); benefit-sharing (development of equitable benefit-sharing mechanisms); implementation and consolidation of the safeguards at the national strategy; and coordination of sectoral policies (forest code and others).

3.1 Action Plan to prevent and control deforestation in the Amazon (PPCDAM)

For the first phase, between 2004 and 2007, the PPCDAM aimed at reducing deforestation by 20% in three years (Grupo Permanente de Trabalho Interministerial, 2004). For the next period, the objective is a 80% reduction of deforestation by 2020 (considering the 1996-2005 baseline) and eventually zero deforestation (Grupo Permanente de Trabalho Interministeria , 2009).

The Action Plan has organized its actions into three major pillars:

- i. Tenure regularization and territorial management;
- ii. Monitoring and control;
- iii. Sustainable production incentives.

Since deforestation and forest degradation are consequences of weak governance in the Amazon region, the first two action pillars aim at reinforcing the public control, clarifying tenure with the enhancement of registers, cartographic data and zoning plans, as well as strengthening monitoring and enforcement capacities. The third pillar seeks to incentivize sustainable practices, supporting sustainable forest management, extractives activities, enhancement of agricultural productivity and restoration of degraded areas. Since 2009, the federal action plan is complemented by state action plans shaped by the same pillars of activities.

The Brazilian Civil House (Casa Civil) coordinates the executive commission of the PPCDAM (Federal Decree from 15/03/2004) and the Ministry of the Environment is in charge of monitoring the activities. State action plans are coordinated by state agencies. The annual deforestation rate in the Brazilian Amazon decreased from 27,400 km² in 2004 to 6,200km² in 2011 (Prodes). According to the established baseline, Brazil is right on track in its commitment with already a reduction of 68,2% of the 1996-2005 deforestation rate. In terms of CO² emissions, it means a reduction of 1.63 billion of tons of CO₂.

The rate of deforestation has followed in decline until 2010 and there is a consensus that the actions of the Plan have been influencing this trajectory. However, the effectiveness of PPCDAm was heavily

concentrated on the actions of command and control, while the actions that should promote a transition to a sustainable development in the Amazon, guaranteeing a more sustainable reduction in the long run, has obtained a low level of success (Maia et al, 2011). Also, it is worth analyzing state deforestation rates: if the deforestation rate decreased at the Amazon level in 2011, it has increased 100% in the state of Rondônia and 30% in Mato Grosso, where the deforestation drivers are stronger.

Moreover, the in-depth analysis of the PPCDAM implementation leads to question the ownership of the deforestation reduction and the sustainability of the deforestation rate drop. In fact, several assessments showed a lack of implementation of the first and the third pillars respectively covering tenure regularization and territorial management and incentives for sustainable production²³ (Abdala & Reis Rosa, 2008) (Maia et al 2011). The implementation of the action plans of the Amazon state plans remains also extremely variable. Finally, coordination issues are also stressed by experts as possible threats, since infrastructure projects, as hydroelectric dams and highways, are not yet considered by the PPCDAM activities (Millikan, 2009) (Marquesini, 2008). A sustainable deforestation reduction will not rely only on monitoring and control, but needs also to be supported by the resolution of governance problems and positive incentives.

3.2 Action Plan to prevent and control deforestation in the Brazilian Cerrado (PPCerrado)

The Brazilian savannah, also called cerrado, covers 24% of the Brazilian territory and had lost 47,8% of its forest in 2008. The average deforestation in the 2002-2008 period was 14.200km² per year. In addition, fires are also an important problem of the cerrado.

On the bases of the National Program of Sustainable Use of the Cerrado enacted through the Federal Decree nº5.577/2005, the Action Plan to Prevent and Reduce Deforestation in the Cerrado, PPCerrado, was first submitted to public consultation from September 2009 to March 2010. The action plan was launched in September 2010 and integrated in the National Climate Change Policy Umbrella established through the Federal decree nº7.390/2010.

To manage the 151 actions listed by the plan, the Civil House coordinates an executive commission with representation of 17 ministries. The plan set a target of 40% reduction of deforestation by 2020 (considering the 2002-2008 baseline) and detailed activities for 2010 and 2011.

The Action Plan has organized its actions into four major pillars for 2011 and 2012:

- i. Monitoring and control;
- ii. Protected areas and territorial planning;
- iii. Sustainable activities;
- iv. Environmental education.

Since 18% of the 2002-2008 deforestation was concentrated in 20 municipalities, PPCerrado actions are meant to be implemented in priority in these 20 municipalities. If deforestation in the cerrado has decreased significantly, the annual rates remain high: in 2009/2010, the Brazilian savannah lost 6.415 km².

²³ According to the Environment Ministry data quoted in the official assessment of the PPCDAM implementation: if 13 of the 17 activities of the pillar "Monitoring and control" were implemented from 75 to 100%, the proportion is 1 of 5 activities for the pillar "Tenure regularization and territorial management" and 4 of 19 in the pillar "Sustainable production incentives" (Maia, Hargrave, Gómez, & Röper, 2011, p. 29)

3.3 Action Plan for Low Carbon Agriculture (ABC Plan)

The ABC Plan provides resources and incentives for farmers to adopt sustainable agricultural techniques. The objective is to mitigate and reduce the emission of the main GHG generated by agriculture activities - carbon dioxide (CO₂), methane (CH₄) and nitrous oxide. The overall objective of the plan is for agricultural production and livestock producers to ensure generate more income, produce more food for the population and increase environmental protection.

The main target of the Plan is to reduce GHG by 133 to 166 million ton CO₂eq up to 2020. Specific objectives include: to contribute to the achievement of GHG reduction as established by international commitments; to guarantee the continuous and steady improvement of good agricultural practices that reduce GHG emissions and additionally increase carbon storage in vegetation and soil; to incentivize the adoption of strategies for plants, productive systems and rural communities, in particularly vulnerable ones, to global warming scenarios in agriculture; to engage efforts to reduce deforestation led by livestock and agriculture production in Amazon and Cerrado Biomes.

The Plan has six main strategies. Table 1 summarizes these strategies and their targets.

Strategy	Action	Target
No-tillage systems	The technique dispenses with the tilling of the soil and prevents erosion by sowing directly in the straw of the previous crop. Protects the soil, reduces water use, increases crop yields and reduces costs with machinery and fuel. The goal is to expand the current 25 million hectares to 33 million hectares.	To reduce the emission of 16 million to 20 million tonnes of CO ₂ equivalent up to 2020.
Degraded Pastures Renovation	To transform the degraded land into productive areas for the production of food, fiber, meat and forests. The government wants to recover 15 million acres.	To reduce between 83 million and 104 million tonnes of CO ₂ equivalent up to 2020.
Integrated crop-livestock-forestry systems	The system aims to switch to agriculture pasture and forest in the same area. This retrieves the soil, increase income and create jobs. The goal is to increase the use of the 4 million hectares.	To reduce between 18 and 22 million tonnes of CO ₂ equivalent by 2020.
Planted Forests	The planting of eucalyptus and pine provide future income to the producer and reduce carbon dioxide from the air thanks to oxygen released by trees. The goal is to increase the area of 6 million hectares to 9 million hectares of planted forests.	To reduce between 8 and 10 million tonnes of CO ₂ equivalent by 2020.

Biological Nitrogen Fixation	The technique seeks to develop microorganisms / bacteria to capture nitrogen in the air and turn it into organic matter for crops. This allows to reduce production costs and improves the soil fertility. The government wants to improve the method in the production of 5.5 million hectares.	To reduce the emission of 10 million tonnes of CO2 equivalent by 2020.
Animal waste treatment	The initiative takes the waste from pigs and other animals for the production of energy (gas) and organic compound. Another benefit is the possibility of certified emission reduction of gases emitted by buying markets. The goal is to treat 4.4 million cubic meters of waste from pig farming and other activities.	To reduce 6.9 million tonnes of CO2 equivalent by 2020.

Table 1: ABC Plan strategies and targets

The ABC Plan is in its initial stages of implementation and therefore it is not possible to evaluate its impacts. However, the Plan will serve as the main strategy of the Forest Investment Program (FIP) in Brazil.

Also, there is a Bill on REDD+ under debate at different Commissions at the National Congress. This bill has been revised, and the most recent and more detailed version (PL 195/2011) provides a more comprehensive regulatory framework by addressing some of the key aspects which were left out in the original version. The REDD+ Bill clarifies that REDD+ activities shall encompass conservation measures, sustainable management of forests and enhancement of carbon stocks (jointly REDD+) and also foresees the creation of a committee to oversee and further regulate the implementation of REDD+ activities (Chagas, 2011).

The REDD Bill also proposes the creation of two different types of REDD+ units as a way to address the dichotomy between market and non-market based funding. A general category of REDD+ units, known as UREDD, entitles holders to receive benefits from national and international funding other than market based (i.e. national and international funding in the form of grants). UREDDs would be non-tradable registrable units, each representing one tonne of verified emission reductions or removals from eligible REDD+ activities. A share of UREDDs could potentially qualify to generate certified REDD units ("CREDDs"), which are defined as tradable intangible rights. In contrast to UREDDs, CREDDs can be used as offsets or compliance both domestically (in the event of future state and municipal targets), as well as internationally (e.g. under foreign emissions trading programs or to assist in the achievement of a country's GHG reduction commitments under the UNFCCC). A REDD committee would be responsible for determining the quantitative and qualitative criteria for the generation of CREDDs (Chagas, 2011).

The Bill does not establish any REDD+ specific target, but says that PPCDAm, PPCerrado, ABC Plan, PNMC, the Brazilian Inventory will be its main tools to implement REDD+. Overall, the proposed REDD+ Bill and the construction of safeguards are important steps in the regulation of carbon forest activities in Brazil. They allow for some harmonization among federal, state and municipal levels and establish the groundwork for further regulation of key aspects associated with the development and operation of REDD+ projects or programs.

On top of these initiatives Brazil has now different sub-national projects and policies for REDD+. The first state to create its REDD+ policy and project was the state of Amazonas in 2007. The state has created the Bolsa Floresta Program to reward forest managers for the environmental services provided by different conservation units in the state. In 2010 the state of Acre created its System for Incentives for Environmental Services (SISA) with the aim of valuing the forest standing and giving incentives for forest managers to do so. Other states, like Mato Grosso and Pará, are also developing their REDD+ policies and strategies.

Despite progress in policies related to forest conservation, however, recent government initiatives often emit contradictory signals, which clearly affect the drivers of deforestation, with important implications for the potential and limitations of REDD+. Particularly relevant examples include the following: (i) persistence of rural credit programmes that stimulate deforestation, especially for cattle ranching, (ii) large-scale infrastructure projects (iii) attempts to undermine the Brazilian Forest Code and other environmental legislation, among others. In summary, despite significant progress in some areas, mainstream development policies for the Brazilian Amazon and Cerrado still tend to be characterised by top-down decision-making, institutional fragmentation and dichotomies of 'development vs. environment', particularly in the electrical energy, transportation and agribusiness sectors (May et al, 2011).

IV – REDD+ initiatives in Brazil: Global Accords on the ground

Deforestation trends in the Brazilian Amazon have been linked to globalised markets for minerals, beef, hides, timber, soybeans, biofuels and other commodities. There is now conflict between Brazilian national policies that encourage trade and commercialisation of these commodities, aiming to achieve economic and development goals, and those that seek to value the standing forest and its direct and indirect goods and services. At present, policies that privilege and encourage economic and development actions, without environmental safeguards, have a greater impact than those intended to reduce deforestation and degradation.

A fundamental challenge for REDD+ implementation will be the development of national policies that can ensure efficient deforestation reduction while achieving an effective and equitable result. Current policies appear contradictory in these terms, as steps to reduce deforestation articulated in government policy appear uncoordinated, while proposals to incorporate REDD+ are in some cases targeted towards those who are legally liable for environmental enhancement.

REDD+ policies must be made consistent with trade, agribusiness and development policies, with which they currently conflict, by developing criteria and indicators for sustainable commodity production and trade as a basis for industrial purchase policies and government sanitary and environmental enforcement. Commerce and taxation issues associated with international trade in certified emissions reductions remain controversial.

Currently, Brazil's specific national level REDD+ policy design is embryonic at best. Policies that address deforestation and degradation, despite some state initiatives, either are still being planned, or have been subordinated to accelerated growth objectives. However, signs have emerged of coordination between states to change this scenario, which can be seen as a first step to guarantee effectiveness of REDD+ actions.

There is a need to clarify responsibilities at national and subnational levels through the creation of federal legislation that regulates REDD+ initiatives within the framework of overall national emissions reduction commitments and the full mix of sectoral strategies towards this end. At present, states are taking the lead in the process by launching state programmes and laws that permit REDD+ initiatives to be undertaken, as in Acre and Amazonas. Legislation on the topic remains decentralised at the close of this reporting period. Thus, the need remains for additional regulation at the federal level and in those states which have not yet legislated on this issue, as well as for an alignment of policy at federal and state levels.

Even with the implementation of plans to reduce deforestation and degradation in the Amazon and in the Cerrado, the current level of REDD+ core definitions remains quite scarce and fundamental questions will need to be answered in the Redd national strategy:

- How to nest the different scales of REDD initiatives?
- Which structures will need to be established to guarantee the success of the system(MRV, register, SIS)?
- What will be the governance arrangements in terms of mandates?
- What will be considered as readiness and REDD+ activities?

Finally, it is worth mentioning that the legislative debates in the National Congress are not fully connected to the discussions led by the Ministry of the Environment on the REDD strategy. Both initiatives are not coordinated and present divergences.

V. Conclusions

With the current decline of deforestation in the Amazon, Brazil seems to be on track to meet its voluntary targets of mitigation actions. Nevertheless, it is worth mentioning that over the next years, specific issues are emerging that could jeopardize the results obtained so far. They are:

- a) Participation and transparency in the design of the missing sectoral plans and the REDD+ strategy

In general terms, it is recognised in Brazil that channels of participation that articulate representatives of the population, forest managers and members of the public sector in practices related to management of public goods are extremely important for reducing GHG emissions (May et al, 2011).

The government has shown willingness to increase the communication with the civil society on climate change issues when they created the Brazilian Climate Change Forum, a multi-stakeholder forum chaired by the President, involving key Ministers as well as civil society representatives. The forum handles various climate change initiatives from the government and is intended to act as a bridge between the government and civil society, but has failed on that due to lack of transparency and implementation of communication strategies. Participation in the design of sectoral plans occurs mainly through the Climate Observatory members, which is a climate network formed by different NGOs and civil society representatives in Brazil.

In order to reach a position of real influence on the government's policymaking, there is a need for more transparency and the inclusion of different representatives of civil society in the climate debate in Brazil. To achieve this goal, there is a need to focus on the dissemination of information among different actors and provide help in building capacity on the issues of climate change.

b) Monitoring of the actual implementation of the policies and reorientation of the strategies

An underlying problem in Brazil has been the lack of capacity for monitoring outcomes or evaluating the long-term impact of policy investments and mitigation actions for climate change over time. Information about the effects of policies, the current state of affairs and autonomous development are necessary not only for policy accountability, but also for designing and modifying policies and strategies.

c) Coordination between the sectoral plans and policies that are not included in the Climate Change National Policy

Integrating different instruments and policies in Brazil, considering mitigation and anti-mitigation initiatives, involves: (i) the need for thorough assessments of the impacts and effectiveness of policies (ii) the implementation as a more essential step than its description (formulation); (iii) the use of multiple complementary policy instruments, technically integrated and coordinated synergistic; (iv) horizontal and vertical coordination: sectoral policies and at different scales administration affect one another; and (v) stakeholder participation: the participation of civil society actors, governmental and private sector actors is essential for success in environmental policies integrated into productive sector policies. The horizontal and vertical coordination are important to avoid overlaps and contradictions of policies, as well as driving their implementation, ensuring consistency with the objectives of policies and institutions.

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