



BRAZIL: AN EMISSIONS TRADING CASE STUDY



Brazil

The World's Carbon Markets: A Case Study Guide to Emissions Trading

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Brief History & Recent Developments

Year	Event
1994	Brazil ratifies the UNFCCC
2002	Brazil ratifies the Kyoto Protocol
2004	Brazil passes the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAM)
2008	Brazil establishes the Amazon Fund
2009	Brazil adopts Law 12.187 establishing "Política Nacional sobre Mudança do Clima"
2009	Sao Paulo establishes 2020 sub-national emission reduction target
2010	Brazil develops voluntary emission reduction target UNFCCC's 15th Conference of the Parties in Copenhagen (COP15)
2012	Brazil adopts national targets for individual industrial sectors

Table 1: Key Dates

Brazil ranks as the world's seventh largest economy, has a population of just over 200 million and a landmass two times larger than the European Union.¹ Despite a high and increasing share of renewables, energy demand and related greenhouse gas (GHG) emissions continues to grow. Land use plays a significant role in Brazil's GHG emissions and, together with an increasing demand for transport fuels, is the top driver of the country's GHG emission growth.² Emission trends by sector can be seen in figure 1. In 2014 Valor Economico (a national news outlet) reported that Brazil's power sector has doubled its GHG emissions over the two previous years due to a three-year drought and increased reliance on thermal power rather than on hydroelectric energy.³ From January to July 2014 cumulative monthly averages of emissions grew by 182% for every 1MWh of electricity produced when compared with the same period in 2012.⁴ However, Brazil has ambitious emission reduction goals, and has made significant steps towards meeting those goals.

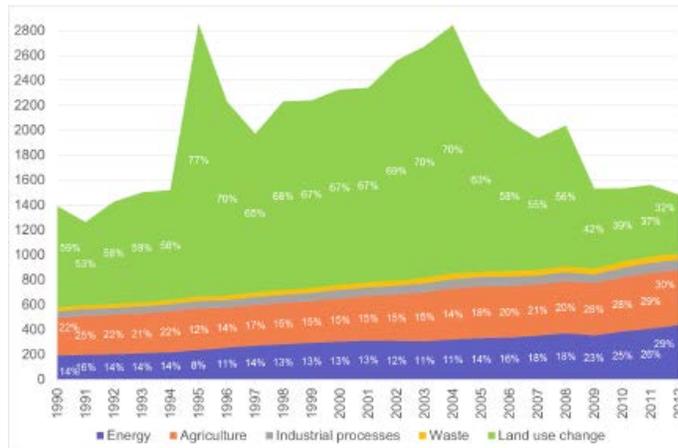


Figure 1: Brazil greenhouse gas emission trends from major sectors (million tCO₂e) 1990-2013

Source: Observatorio de Clima, 2013.

Recognizing the international call to mitigate carbon emissions,⁵ Brazil ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 along with the Kyoto Protocol⁶ in 2002. Government policy to reduce emissions has been largely focused on reducing emissions from deforestation through the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAM) introduced in 2004. The Action Plan was established to coordinate federal, state and municipal efforts to enhance monitoring infrastructure which would become an important tool for enforcement activities. This led to a nearly 64% decline in deforestation rates between 2004 and 2009.⁷ Following this success, on December 29, 2009 Brazil adopted Law 12.187, which established the country's "Política Nacional sobre Mudança do Clima" (PNMC), Brazil's **National Climate Change Policy**,⁸ and set a voluntary national **GHG emissions reduction target of between 36.1 and 38.9% by 2020 relative to BAU (business as usual)**—or a 6 - 10 % reduction relative to 2005 levels.⁹ Brazil is expected to submit its intended Nationally Determined Contribution to the UNFCCC in October 2015.¹⁰

Sector	CO ₂ e	CO ₂	CH ₄	N ₂ O
LUCF	1,065,134	1,005,166	2,593	18
Agriculture and Livestock	364,324		11,236	414
Energy	286,477	274,127	432	11
Industrial Processes	68,707	59,436	8	15
Waste	38,064	86	1,627	12
Total	1,822,706	1,338,815	15,896	469

Table 1: Average yearly GHG emissions by sector and gas, Brazil, 1990-2010.

Source: Ministério da Ciência, 2011. Available at: mct.gov.br

Actions towards forwarding the efficiency of natural, scientific, technological, and human resources include:¹¹

- The *National Policy for Energy Efficiency*, which aims to save up to 106 TWh/year by 2030, and avoid approximately 30 million tCO₂e of emissions.
- The gradual replacement of coal in steel plants by sustainable charcoal.
- The replacement of 1 million old fridges per year over the next ten years, to avoid 3 million tCO₂e/year from CFCs.
- Reduction of 2,200 GWh/year of electricity consumption by 2015 by instead using water solar power water heating systems.

- Avoidance of 1,078 GtCO_{2e}/year from HCFCs for 2008-2040 from the replacement of refrigerant gases.
- 20% increase in recycling by 2015.
- The phase out of fires to clear sugarcane fields when harvesting is possible.
- More sustainable land-use practices, including the recovery of 100 million ha of degraded pastures, the improvement of carbon sinks via livestock integration, agro-forestry, the adaptation of zero-tillage systems and reduced usage of nitrogenous fertilizers, and measures to reduce methane production from grazing cattle.

Brazil has a relatively high share of **renewable energy in its electricity and energy matrices**. The energy mix is largely dominated by hydropower both in terms of electricity generation and capacity. In 2012, 77% of the 592 TWh of electricity generated was derived from hydropower.¹²

The country's plans to improve its renewable energy performance through the following measures:¹³

- Increase of electricity supply from cogeneration, primarily from sugarcane bagasse, to 11.4% of total supply by 2030.
- Over the next ten years, reduce non-technical losses in electricity by 1,000 GWh/year, thereby reducing the waste of energy by 400 GWh/year.
- As part of the Ten Year Energy Plan (2007-2016), add 34,460 MW from new hydropower plants.
- Promote efforts to increase energy from wind, sugarcane, and photovoltaics.

One of the primary stated purposes of the PNMC is to “prevent, avoid or minimise identified causes of climate change with anthropogenic origin within the national territory.”¹⁴ It aims to do so by making social-economic development compatible with the protection of the climate system,¹⁵ by reducing anthropogenic GHG emissions from different sources,¹⁶ through the strengthening of anthropogenic sequestration by sinks in the national territory,¹⁷ and by implementing measures to promote adaptation to climate change.¹⁸

The PNMC program is divided into three components:¹⁹

Component 1: The purpose of the first component is *to increase incentives and build capacity for climate change action*, by mainstreaming climate change within and across all sectors as well as incorporating targets into national policies. Additionally, the aim of this component is to develop standards for clean energy, biofuels and agro-energy. These elements are to be supported by an enhancement of public awareness as well as strategies that will ensure the long-term sustainability of these initiatives.

Component 2: represents *the implementation of PNMC across all sectors*. This part involves increased inter-ministerial participation and implementation through GEX as well as implementing energy efficiency technologies, practices and products in all sectors.

Component 3: is centred on *monitoring and evaluation, as well as public awareness and information sharing*.

Supported by Article 12 of the PNMC, Brazil's domestic emissions target was developed during the UNFCCC's 15th Conference of the Parties in Copenhagen (COP15) and became their voluntary Copenhagen Accord pledge in January 2010.²⁰

In a subsequent communication on Nationally Appropriate Mitigation Action's (NAMAs) to the UNFCCC Secretariat, Brazil detailed its official emissions reduction commitments as follows:²¹

- Land Use, Land-Use Change & Forestry (LULUCF):
 - 668 million tCO_{2e}/year mitigation in 2020 from deforestation reductions in the Amazon Region and the Cerrado region;
 - 83 to 104 million tCO_{2e}/year mitigation in 2020 from recovery of degraded pastures;
 - 22 million tCO_{2e}/year mitigation in 2020 from reduced livestock emissions;

- 20 million tCO_{2e}/year mitigation in 2020 from zero tillage; and
 - 16-22 million tCO_{2e}/year mitigation in 2020 from biological fixing.
- Energy:
 - 12-15 million tCO_{2e}/year mitigation in 2020 from energy efficiency measures;
 - 28-60 million tCO_{2e}/year mitigation in 2020 from the biofuels usage;
 - 79-99 million tCO_{2e}/year mitigation in 2020 from increased hydropower generation.
- Industry:
 - 12-15 million tCO_{2e}/year mitigation in 2020 from the substitution of native forest-based charcoal by planted forest-based charcoal in the steel industry.
- According to Article 5 of Decree No. 7390, (which was signed in December 2010 with the purpose of regulating Articles 6, 11, and 12 of the PNMC), Brazil's **projected 2020 BAU** emissions are 3.236 GtCO_{2e}, from land-use change (1.404 GtCO_{2e}); energy (868 million tCO_{2e}); agriculture (730 million tCO_{2e}); and waste (234 million tCO_{2e}). To achieve its 36.1-38.9% reduction target, Brazil must reduce 2020 emissions by 1.168-1.259 GtCO_{2e} relative to BAU. The following ten measures, which may make use of the Clean Development Mechanism (CDM)²² or other UN mechanisms, have been outlined in Article 6 of Decree No. 7390 as a **means for achieving the country's emissions target**:²³
 1. 80% reduction of annual Amazonian deforestation relative to the 1996-2005 average by 2020;
 2. 40% reduction of annual Bioma Cerrado deforestation relative to the 1999-2008 average by 2020;
 3. Expansion of renewable energy supply from wind, small-scale hydro and bioelectricity, biofuels supply, and energy efficiency;
 4. Recovery of 15 million hectares of degraded pastures;
 5. Extension of livestock-crop-forest integration projects by 4 million hectares;
 6. Expansion of direct planting by 8 million hectares;
 7. Expansion of nitrogen fixation by 5.5 million hectares, substituting the use of nitrogen-based fertilizers;
 8. Expansion of forest planting by 3 million hectares;
 9. Extension of technologies used for the treatment of 4.4 million cubic meters of animal waste; and
 10. For steel, the increased usage of charcoal that originates from planted forests, as well as improvement of the efficiency of the carbonization process.

According to Article 11, the PNMC aims to achieve emissions reductions by establishing Sectorial Plans for mitigation and adaptation to climate change in the following sectors:²⁴ generation and distribution of electric power, urban public transportation, interstate transport of cargo and passengers, manufacturing industry, durable consumer goods industry, chemical industries, pulp and paper industries, mining, civil construction industry, health services, agriculture and cattle farming.²⁵

The sectoral breakdown of the 36.1-38.9% reduction targets were not fully defined by the PNMC, but the correspondence between Brazil and the UN for the Copenhagen Accord yielded the following estimates: deforestation reduction (63.5% of reductions); energy (19.8%); agriculture and cattle raising (15.7%); and other sectors (1%).²⁶ Current policies and approaches will continue up to 2020, and will possibly be improved to the development of the post-2020 climate strategy. In June 2012, Brazil adopted national targets for its heavy industry, transportation, and mining sectors of 5%, 2%, and 4% emissions reductions, respectively, relative to BAU by 2020.

Domestic Markets

National Activity

Article 6, Section XI of Brazil's National Policy on Climate Change (PNMC) explicitly mentions "financial and economic mechanisms that are national in scope and referring to mitigation and adaptation to climate change" as **instruments to achieve the country's mitigation targets**.²⁷ The language of this article specifically outlines regulatory elements that could support Brazilian ETS activity, and authorizes the creation of a Brazilian Carbon Market (Mercado Brasileiro de Redcao de Emissoes, MBRE).

As a result, over the last four years there has been increased consideration of the development of a **national-level cap-and-trade program in Brazil**. Tasked by the Executive Group of the Inter-ministerial Commission on Climate Change, the Ministry of Finance (MF) initiated a multi-institutional working group to assess the **convenience and feasibility of carbon pricing instruments** and to determine the impact of an ETS on the Brazilian economy. This phase began in early 2012 and involved seven ministries who, after this first phase of investigation, offered the following recommendations:²⁸

- The improvement of information on emissions at the installation level
- A cost benefit analysis of carbon pricing via carbon tax or an ETS

Thereafter, in order take stock of the developments in **Phase 1** (2012/2013), MF hired GVCes/FGV (a Brazilian research institution) to improve information and data available at the installation level. The two main objectives of this group were to consolidate and disseminate knowledge related to data collection and GHG management at the facility level. The findings would later inform a working group (WG) coordinated by MF and integrated by Federal and State Governments. In February 2014 the WG developed a report assessing policy options for the establishment of a National GHG Emissions Reporting Program.²⁹ The WG assessment will be submitted to decision makers to support the enhancement of the PNMC. Additionally, during the first phase of Brazil’s Market Readiness Proposal the British embassy joined with MF under the “Green Fiscal Policy in Brazil” project which compiled existing analytical tools to assess the economic impacts of GHG emission reductions.³⁰

According to the Brazilian Development Bank’s (BNDES) website (March 2013), BNDES has signed a technical cooperation agreement with the state of Rio de Janeiro and the Acre Institute for Climate Change and Regulation of Environmental Services “aimed at stimulating the development of a market for environmental assets in Brazil,” which “paves the way to develop a carbon market in Brazil.” Potential results from this agreement include:

- A knowledge network/exchange of experiences and training to provide support for companies to measure, manage, and reduce emissions;
- The creation of corporate carbon inventories; and
- The specification of emissions targets, as well as allowance distribution mechanisms.

BNDES has chosen to partner with Rio and Acre due to the two states’ experience with carbon market development. Rio’s ETS history is summarized below, and Acre’s progress in developing a legal framework for reducing emissions from deforestation and forest degradation (REDD) is at a more advanced stage than anywhere else in the world. However, according to the BNDES (March 2013), “the agreement is open for other agencies and entities of Direct and Indirect Public Administration to adhere, and the BNDES is committed to incorporating new signatories.”³¹

The new phase (2014-March 2015) has been planned to further simulate the impacts of fiscal reform in relation to GHG emissions economic performance and job creation using macroeconomic modelling. The result will help to inform, the exploration for a “green tax reform” in Brazil during the next phase.³²

Sub-national Activity

On the state level, 19 states have climate change laws, and at least seven include provisions for the creation of markets for carbon credits.³³

In 2009, Sao Paulo was the first and only state to determine its own emission reduction target of a 20% reduction in emissions relative to 2005 levels by 2020, (see Table 2).

Policies	National Policy on Climate Change	State Policy on Climate Change of Sao Paulo	Municipal Policy on Climate Change of Sao Paulo
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Law	No.12,187/2009	No.13,798/2009	No.14,933/2009
Target	36.1% - 38.9% by 2020	20% by 2020	30% by 2012
Baseline	BAU 2020 projections	2005 inventory figures	2005 inventory figures

Table 2: National and Sao Paulo (state and city) climate change policy.

Source: Institute for Applied Economic Research, 2011. Available at: ipea.gov.br

The city and state of Rio de Janeiro have also pledged to reduce emissions through sub-national climate change laws. In 2010, the state of Rio passed its Policy on Global Climate Change and Sustainable Development (PEMC), a policy that sets emissions reduction targets and adaptation goals through 2030. This policy identifies the waste, transportation, energy, and industrial sectors as crucial for emissions reductions, and it sets a carbon intensity targets requiring that the carbon intensity of the State return to below 2005 levels by 2030. The City passed its own emission reduction goal in 2011 of an 8% reduction relative to 2005 levels by 2012, 16% by 2016, and 20% by 2020.³⁴ Both the city and state of Rio de Janeiro have established reliable GHG inventories.³⁵

The state has also established **Bolsa Verde do Rio De Janeiro, BVRio**, (launched in December 2011), which serves as an electronic exchange and registry for emission credits, quotas and voluntary market products.³⁶ BVRio was originally created via a partnership between Rio's Environment Ministry and the municipality's Department of Finance as a non-profit association with the mission of promoting an active market for a green economy through facilitating the implementation of policies that benefit both the business sector and the environment. The association that comprises BVRio has three categories of participants; the business sector, non-governmental organisations, and market operators. Specifically, BVRio aims to facilitate the commercialization of environmental activities that stem from legal obligations, such as restoration of forest areas, waste management, and GHG emissions reductions.³⁷ At present, BVRio has two main activities: (1) Develop market mechanisms for environmental services and assets; and (2) Provide and operate a trading platform for these assets.³⁸ Recently, BVRio has signed cooperation agreements with the state of Amazonas, the Green Cities Program in Para, and the municipality of Paragominas to develop eco-friendly market mechanisms.³⁹

In 2011 Rio de Janeiro announced its intention to launch a state-wide ETS for its largest emitters, which was meant to be established from 2013-15. If the state governor had signed the decree in June 2012, Rio De Janeiro could have become the first Latin American government to pass an emissions trading system. The state was studying an ETS proposal and had planned an announcement at Rio +20. In June 2012, when the signing of the Rio ETS seemed inevitable, **Sao Paulo** announced plans to launch their own emissions trading system (SP ETS), anticipating a possible link in the future with the suggested Rio ETS.⁴⁰ The Rio ETS decree, however, was not signed at Rio+20, largely due to opposition claiming that the cement, ceramics, chemical, and petrochemical sectors would incur unwanted additional costs from such a system.⁴¹ At present, the state government of Rio is continuing discussions with the private sector about cutting emissions.

The **suggested Rio ETS** was designed by the state government in collaboration with officials from Thomson Reuters Point Carbon, and, if it had been signed, it would have launched in January 2013.⁴² The proposed Rio ETS included the state's major emitters, such as oil giant Petrobras, mining giant Vale, and steel makers CSN and ThyssenKrupp. The **major covered industries** were cement, ceramics, chemicals, and petrochemicals, all of which belong to the industrial sector. The system's target, as well as its rules on offsets, was to be revealed after the signing of the decree. The proposed system was broken into **three phases**: Phase I (2013-15), Phase II (2016-20), and Phase III (2021-30). According to the state's GHG inventory, Rio emitted 72 million tCO_{2e} in 2008, and industry accounted for almost one-third of the state's emissions.⁴³ According to a study from Rio's Federal University, the Rio ETS proposed to reduce emissions from the state's carbon intensive sectors by a total of 209 million tCO_{2e} by 2030 relative to BAU.⁴⁴

In Phase I, billed as the 'pilot phase,' the government would have distributed the majority of **allowances** (at least 90%) free of charge to covered entities, but, beginning in Phase II, the quantity of freely distributed allowances would have gradually reduced annually. At the beginning of Phase III, **free distribution** was to be completely phased out and replaced by **annual auctions**. Fines would have penalized participants that failed to comply. Authorized **credit types** for the Rio ETS included CERs and voluntary credits validated by the Verified Carbon Standard (VCS).⁴⁵

Forestry

In 1965 Brazil passed the Brazilian Forest Code legislation which focused on the legal requirements of forest landowners in the Amazon to help maintain and conserve the Brazilian Amazon. Originally, the legislation stipulated that 50% of forests be maintained as legal reserves, this number was increased to 80% in later years; however, no forest landowners have yet been prosecuted under the legislation. In 2004, Brazil passed its Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAM), in which it dedicated itself to greatly reducing domestic deforestation.⁴⁶ One of Brazil's deforestation goals is to eliminate net loss of forest coverage by 2015, and then double forest coverage from 5.5 million ha to 11 million ha in 2020. In 2008, the Brazilian government established the Amazon Fund, which aims to compensate landowners for each ton of CO₂ not emitted.⁴⁷ As depicted in Figure 2, between 2006 and 2017, the country aims to reduce emissions from deforestation by 4.8 GtCO₂e, assuming a biomass carbon stock of 100 tC/ha.⁴⁸

In 2012, Brazil had reduced deforestation by 2.2 GtCO₂, or 76% below the 1996-2005 average, a greater emissions reduction than in any other country. This achievement "came very close to the national target Brazil adopted – 80% reduction by 2020 – making it the world leader in emissions reductions."⁴⁹ However, recent data shows that from 2012-13, deforestation actually rose by 29%⁵⁰ leading to an increase in Brazil's national CO₂ emissions by 7.8%.⁵¹ The largest sources of this increase are in the land-use change and forestry sector (accounting for 35% of total GHG emissions in 2013), and an increased dependency on fossil fuels due to unfavorable environmental conditions for hydroelectric generation. The rate of deforestation dropped again by 18%⁵² between 2013 and 2014, however rates appear to be increasing again.⁵³

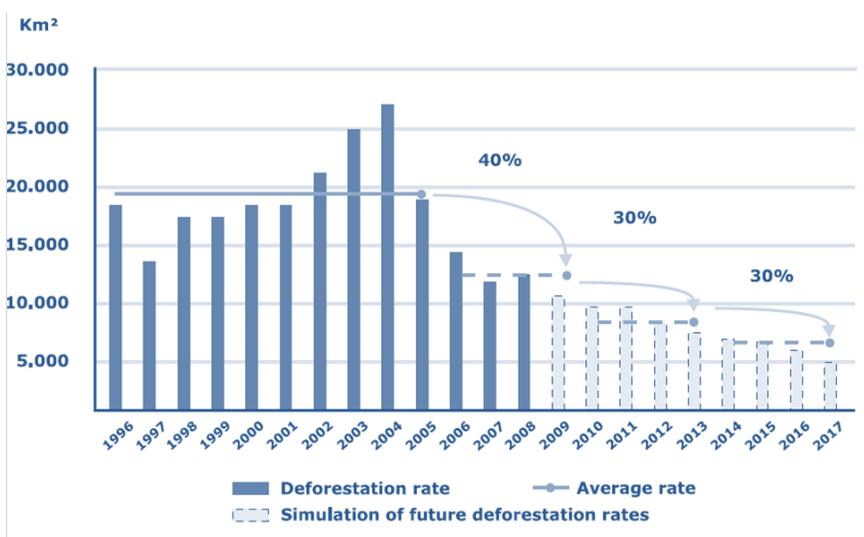


Figure 2: Trends in Deforestation Rate in the Amazon

Source: Australian Government, Department of Climate Change and Energy, 2011. Available at: climatechange.gov.au

According to EPRI (2010), "Brazil could supply 300-500 million tons CO₂ of offsets annually to the international community by 2020 if current REDD negotiations and design processes come to fruition." Several Brazilian states, namely Acre, Mato Grosso, Para, and Amazonas, have made substantial progress towards REDD program development. EPRI (2010) states that Mato Grosso's achievement of its state deforestation target over the period 2010-20 "could yield 600 million tCO₂e of emissions reductions beyond the federal target, and 2.4 GtCO₂e of emissions reductions below the federal baseline for Mato Grosso."⁵⁴ In addition, Acre could produce up to 69 million tCO₂e of emissions reductions from REDD activity over the next eight years.⁵⁵ In the state of Para, the Cikel Project issued 100,000 credits for REDD supply in June 2012. Project proponents expect further credits and to eventually receive 370,000 Voluntary Carbon Units (VCUs) annually over the next ten years. A project, led by Bunge Environmental Markets and Florestal Santa Maria in Mato Grosso was validated by VCS and was to receive nearly a million credits in August 2012.⁵⁶ This

project was launched in June 2012, and the aim is to preserve 70,000 hectares of native forest in the Amazon and generate about 30 million tCO₂e of carbon credits, or 1 million tCO₂e/year over 30 years.⁵⁷

Six Brazilian states – Acre, Amapa, Amazonas, Mato Grosso, Para, and Tocantins – participate in the *Governors' Climate and Forests Task Force (GCF)*, which is a multi-jurisdictional collaborative effort between 22 states and provinces from Brazil, Indonesia, Mexico, Nigeria, Peru, Spain, and the United States that was established in 2009. GCF focuses on:

“developing the technical, legal, and institutional frameworks for comprehensive jurisdiction-wide programs to reduce emissions from deforestation and land use; support strategies for low-emissions rural development; and serve as pathways to and pillars of robust national and international efforts to include forests and land use in climate policy.”⁵⁸

In addition, in 2010, the Brazilian state of Acre signed a *memorandum of understanding (MOU)* with the states of California, USA and Chiapas, Mexico to work towards the establishment of sectoral offset programs from REDD.⁵⁹ The three states have created a *REDD Offsets Working Group (ROW)* in order to determine:

- (1) the legal and institutional mechanisms necessary for a sub-national compliance program, such as California's, to recognize international emission reduction credits from state-level sectoral REDD programs, such as in Chiapas and/or Acre; and
- (2) the key policy and technical elements that a sectoral REDD program should achieve in order for REDD credits to be recognized in a compliance program.⁶⁰

In December 2012, Acre signed an agreement with the German Development Bank (KfW) to cut GHG emissions from deforestation in exchange for up to EUR 19 million over four years. This funding will support Acre's system of incentives for environmental services (SISA), which rewards local landowners for protecting the forest and generate important lessons on social inclusion and the implementation of REDD+.⁶¹

International Markets

As of 1 March 2015, Brazil was host to a total of 455 CDM projects in a wide range of sectors.⁶² The majority of projects address methane avoidance (27%), hydroelectric projects (25%), and landfill gas (13%). To date, the CDM is the main component of Brazil's activity in the carbon market. The BMF/Bovespa environmental assets exchange (described below) accepts valid CDM projects, as well as projects from independent entities that receive official verification. CERs are traded on commodities and futures exchanges authorized by the Brazilian Securities and Exchange Commission (CVM).⁶³ In March 2015, Brazil was issued a total of 100,342 kCERs which is a share of 6.5% the total number of kCERs issued.⁶⁴

REGULATION & OVERSIGHT: The major Brazilian environmental assets exchanges are Bolsa Verde do Rio de Janeiro (BVRio) and the BMF/Bovespa environmental assets exchange. The initial purpose of the **BMF/Bovespa environmental assets exchange** derives from Article 9 of the PNMC, which states that:

“The Brazilian Emissions Reduction Market shall be operated in commodities, futures and stock exchanges, and in over-the-counter trading companies authorized by the Securities and Exchange Commission of Brazil – CVM, where negotiations for securities representing certified avoided greenhouse gas emissions shall take place.”⁶⁵

While the Brazilian Emissions Reduction Market, as defined by the PNMC, has yet to be implemented, the development of such a market is contemplated in the law. In the meantime, an exchange for environmental assets in Brazil, through BMF/Bovespa, operates as a stock exchange for voluntary reduction permits, and it holds auctions for CERs and for voluntary carbon units. This resulted from a joint initiative by the Ministry of Development, Industry and Foreign

Trade (MDIC), and the Commodities and Futures Exchange (BM&F). The market was launched in Sao Paulo in December 2004, and it was the first market of its kind in a developing country. It became operational in September 2005 with the Project Bank, which aims to improve visibility and facilitate the commercialization of CDM projects. Its economic function is to attract direct investments that contribute to economic development, encourage clean technology projects, and bolster the international appeal of Brazil's environmental market instruments.⁶⁶

According to the Wuppertal Institute (2011), BMF/Bovespa environmental assets exchange “serves to create the basis for a Brazilian domestic carbon market by installing a secure trading environment for carbon credits.” Private actors have been the primary operators of this exchange.⁶⁷ Regarding regulation, the BMF/Bovespa environmental assets exchange includes a **registry system**, and one of its goals is to enable price transparency. Projects at any stage of development may be registered in the Project Bank, and CDM projects are the most common type.⁶⁸ While its initial purpose was to lay the foundation for a national ETS, the lack of such a policy has produced a different outcome in practice. In order to gain credibility and provide transparency in negotiations, the BMF/Bovespa environmental assets exchange is connected to the Stock Exchange of Rio de Janeiro.⁶⁹

What Distinguishes this Policy?

UNIQUE ASPECTS:

1. More so than any other country, GHGs from deforestation dominate Brazil's emissions profile. As a result, the **development of REDD+ would likely benefit Brazil more than any other country.**

CHALLENGES

1. Amazonian deforestation appears to be increasing since 2014, at least in part because of failure to create positive incentives and political push-back against increased environmental law enforcement. Brazil's Environment Ministry (MMA) has launched a process to establish a National REDD+ Policy, and several other policies are also contemplated.
2. It is largely unknown if, or when Brazil will integrate a carbon pricing instrument into the PNMC. Should Brazil opt to introduce a carbon price signal, deciding whether to implement a carbon tax (to regulate prices) or an ETS (to regulate quantities) or a combination of both will be a challenge to consider in the coming years.

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Disclaimer: The authors encourage readers to please contact the CDC Climat Research, EDF and IETA contacts with any corrections, additions, revisions, or any other comments, including any relevant citations. This will be invaluable in strengthening and updating the case studies and ensuring they are as correct and informative as possible

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