



# A CASE STUDY OF THE BRAZIL FOREST INVESTMENT PROGRAM


AN INNOVATIVE APPROACH TO FOREST INVESTMENTS  
IN THE CERRADO BIOME, 2012–2018





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# ACRONYMS

|           |   |
|-----------|---|
| ABC Plan  | Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture |
| BIP       | Brazil Investment Plan  |
| CAA/NM    | Center for Alternative Agriculture of North Minas   |
| CAR       | Rural Environmental Cadastre  |
| CONACER   | National Commission for the Sustainable Cerrado Program   |
| DGM       | Dedicated Grant Mechanism   |
| FIP       | Forest Investment Program   |
| FUNATURA  | Pro-Nature Foundation   |
| GEF       | Global Environment Facility   |
| GHG       | Greenhouse Gas  |
| GIZ       | German Technical Cooperation Agency   |
| IBRD      | International Bank for Reconstruction and Development   |
| IDB       | Inter-American Development Bank   |
| IFC       | International Finance Corporation   |
| INPE      | National Institute of Space Research  |
| MAPA      | Ministry of Agriculture, Livestock and Food Supply  |
| MCTIC     | Ministry of Science, Technology, Innovation and Communication   |
| MDB       | Multilateral Development Bank   |
| MMA       | Ministry of Environment   |
| NDC       | National Determined Contribution  |
| PNAP      | National Strategic Plan for Protected Areas   |
| PNGATI    | National Policy on Territorial and Environmental Management of Indigenous Lands                         |
| PNMC      | National Policy for Climate Change  |
| PNDSPCT   | National Policy for the Sustainable Development of Traditional Peoples and Communities                  |
| PPCerrado | Action Plan to Prevent and Control Deforestation and Fires in the Cerrado Biome                         |
| PPG-7     | Pilot Program for the Protection of Tropical Forests of Brazil  |
| PRODES    | Monitoring Amazonian Forest Cover by Satellite  |
| REDD+     | Reducing Emissions from Deforestation, Forest Degradation and Land-use Change                           |
| SENAR     | National Rural Learning Service   |
| SFB       | Brazilian Forest Service  |
| SNIF      | National System of Forest Information   |
| UNFCCC    | United Nations Framework Convention on Climate Change   |







# PREFACE



The Brazil Investment Plan (BIP) was launched in 2012 as an innovative effort to expand Brazil's climate change policies by directly addressing drivers of deforestation and forest degradation in the Cerrado Biome, a vegetation mosaic ranging from open grasslands to forest formations, varying in structure and composition. This case study of the Brazil Investment Plan will focus on the program-level, with particular attention being given to the synergies between projects and programs that have the potential to change the country's climate change policies and assist it in meeting its international climate change commitments. It will provide a qualitative analysis of five key topics – Strategy; Institutional Arrangement; Engaging with Stakeholders; Policy Approach; and Program Design – and will highlight innovative aspects or promising methodologies that may be useful to other FIP country programs.

# INTRODUCTION

## The Global Role of Brazil: A Forest and Biodiversity Hotspot

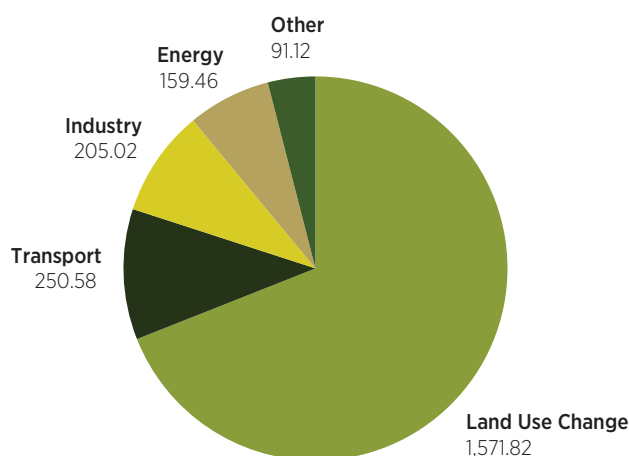
Brazil is the fifth largest country in the world in both size and population; houses a third of the world's remaining tropical forests; and is the most biodiverse country in the world in total number of species, with more than 55,000 species of vascular plants.<sup>1</sup> Ever since it hosted the historic 1992 Earth Summit in Rio de Janeiro, Brazil has been a leader in implementing national environmental policies for protected areas, indigenous lands, water resources, climate change and sustainable development.

Brazil has carved out a unique path in its efforts to reduce deforestation rates and greenhouse gas (GHG) emissions. Brazil did not join forest and climate change programs such as REDD+ that were developed in the context of the United Nations climate change negotiations, but instead put in place a wide-ranging strategy for addressing its specific climate change challenges. Brazil's National Determined Contribution (NDC) to the 2015 United Nations Paris Climate Accord committed to reduce greenhouse gas emissions by 37% below 2005 levels by 2025 covering the entire country; to have zero illegal deforestation in the Amazon by 2030; to restore and reforest 12 million hectares of forests by 2030; and to strengthen and enforce the Forest Code at federal, state and municipal levels.

In the energy sector, Brazil is committed to providing 45% of its energy mix with renewable energy by 2030.

**FIGURE 1** Brazil's Carbon Dioxide Emissions, by sector (2016)

in million tons of CO<sub>2</sub> equivalent



Source: Climate News Network <https://climatenetwork.net/increase-brazils-emissions-deforestation/>

In spite of these numerous environmental efforts, Brazil's forests continue to face intense pressures from a powerful array of drivers of deforestation linked to agricultural and cattle expansion, infrastructure development, industrial mining, illegal logging and urban expansion. Deforestation and other land-use conversion make up the majority of CO<sub>2</sub> emissions at a national level (see Figure 1).

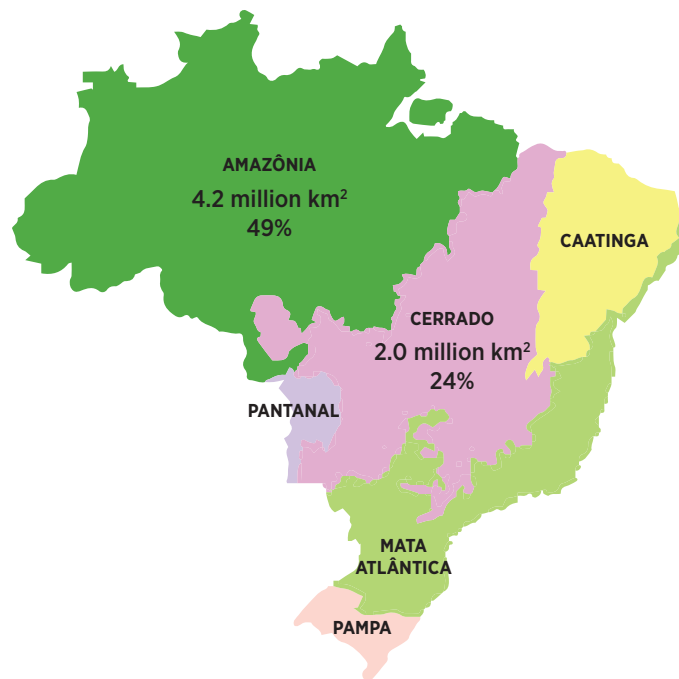


## Biomes of Brazil

One of the most significant changes in the way that environmental issues are addressed in Brazil was with the adoption of the biome scale for the formulation of environmental and climate change mitigation policies. Each of Brazil's six terrestrial biomes (Figure 2) and one coastal-marine biome have a set of programs tailored to meet their specific socioenvironmental needs.

Since the 1980s, the Amazon rainforest biome has garnered a significant share of international attention and funding, while the other Brazilian biomes have received far less attention. The Atlantic Forest (Mata Atlântica) is Brazil's most endangered biome, with less than 8% of its original vegetation remaining, followed by the Cerrado biome in central Brazil, with approximately 47% of its original vegetation still intact but being deforested at twice the rate of the Amazon in 2015. The Pantanal wetlands in the west of the country are threatened by large-scale land use change in the headwaters region, located primarily in the Cerrado.

**FIGURE 2** Terrestrial Biomes of Brazil



Source: IBGE, 2004.

### DEFINITIONS

**Biome:** A set of contiguous terrestrial or marine ecosystems, extending over a large area, usually characterized by a dominant vegetation.

**Cerrado:** A tropical savanna-forest biome of South America that covers approximately two million square kilometers and is primarily located in Brazil's central plateaus.

**Endemism:** The situation in which a species is restricted to a particular geographic region as a result of factors such as isolation or in response to abiotic conditions.<sup>2</sup>

**Anthropogenic:** Relating to, or resulting from, the influence of human beings on nature.<sup>3</sup>



# THE CERRADO BIOME OF BRAZIL

## A Biodiverse, Highly Threatened Biome

The Cerrado is the most biodiverse savanna-forest complex in the world and, with a 45% endemism rate, is regarded as one of 34 global biodiversity hotspots.<sup>4</sup> It is Brazil's second largest biome after the Amazon rainforest, and accounts for nearly 24% percent of the country's land area. This biome harbors enormous socio-diversity as well and is home to 42 different indigenous peoples and numerous other traditional communities.

The Cerrado biome is comprised of an intricate mosaic of ecosystems with a great diversity of habitats that has produced a remarkable assemblage of species among different plant varieties and holds significant reserves of carbon and water resources. The main wooded habitat types of the Cerrado include: forest savanna, wooded savanna, park savanna, grassland-woody savanna, savanna wetlands and gallery forests. Variation in temperature extremes and in total amount of rainfall and altitude throughout the Cerrado has produced widely variable growth in which most large trees tend to have twisted trunks. As such, Cerrado forests have never been a major site of industrial logging enterprises and most deforestation comes from burnings.

Scientists have referred to the Cerrado as an “inverted forest” in which trees can house as much as 80% of their biomass in large root systems. The average estimated carbon stock for the Cerrado is 265 Mg/ha, with soil organic matter comprising 70% (185 Mg/ha) when considering the vegetation and soil up to a depth of one meter. Tropical savannas have been estimated to have an average carbon uptake of approximately 0.14 Mg C ha/year, with the Cerrado functioning as a CO<sub>2</sub> sink during the rainy season (October through April).<sup>5</sup> This figure takes on added significance when compared with the average carbon stocks of the Amazon rainforest<sup>6</sup> which fluctuate between 65 and 125 Mg/ha depending upon the type of forest cover.<sup>7</sup>

Immense aquifers under the Cerrado provide the headwaters of three South American continental watersheds – Paraná-Paraguay, Araguaia-Tocantins and São Francisco – and the biome provides critical ecosystem services, such as biodiversity conservation, water for human consumption, connectivity of vegetation areas and fertile soils for agricultural production.

The Cerrado is home to a population of 26.4 million people (13% of the country's population), encompasses 24% of Brazil's total area, and accounts for 32% of all the rural properties in Brazil. It also has the largest average area of rural properties in the entire country (at 397 hectares),<sup>8</sup> which makes large rural landowners one of the most powerful political and economic forces in the region.



Environmental and climate change work in the Cerrado is made more difficult by the misconceptions of this biome in the popular imagination. The Cerrado is not commonly viewed as a “forest” and tends to be classified as a “savanna”, which is perceived to have less environmental value than a forest. As Joberto Veloso de Freitas, Director of the FIP-Forest Inventory project, stated: “When one views the Cerrado as a forest, it greatly increases the chances of it being protected.”

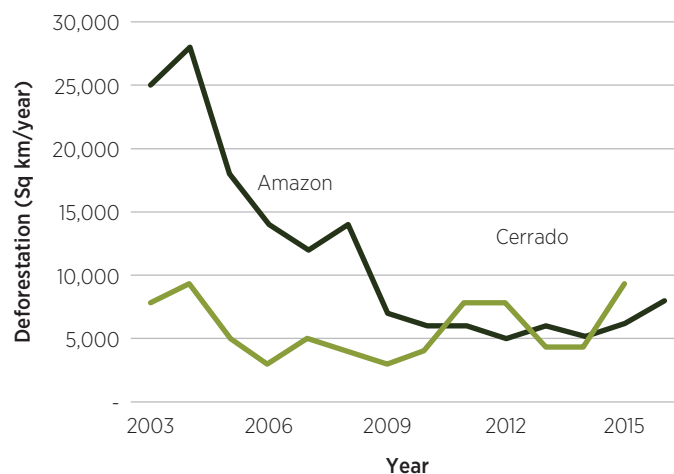
## Drivers of Deforestation and Land-use Change

While deforestation rates in the Amazon witnessed a historic decline between 2005 and 2015, the Cerrado savanna-forest biome has experienced increased deforestation rates from the rapid expansion of agriculture and cattle ranching fueled by the global commodity boom of the early 21st century, with the Cerrado surpassing the Amazon starting in 2011 (Figure 3).

Brazil has led the world in soybean planted area expansion with 19 million hectares since 2000, or 47.5% of the world’s total increase of 40 million hectares.<sup>9</sup> Figure 4 shows that the majority of intensifying and new deforestation hot spots in Brazil are located in the Cerrado biome, thus placing it at the fore of Brazil’s climate change mitigation efforts.

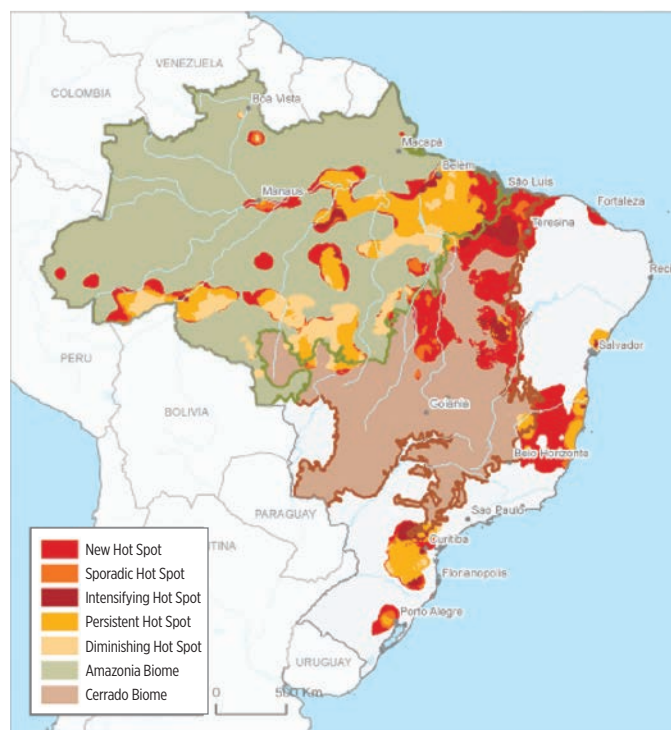
Much of this expansion has occurred in Brazil’s newest soy frontier, the so-called “Matopiba” region stretching across four northern states (Maranhão, Tocantins, Piauí and Bahia) and encompassing over 730,000 square kilometers, which has resulted in increased deforestation rates, forest degradation and greenhouse gas emissions.

**FIGURE 3** Deforestation in the Brazilian Amazon and the Cerrado, 2003–2015



Data Sources: Soares-Filho et al, 2014. INPE, 2016. Spera, 2017.

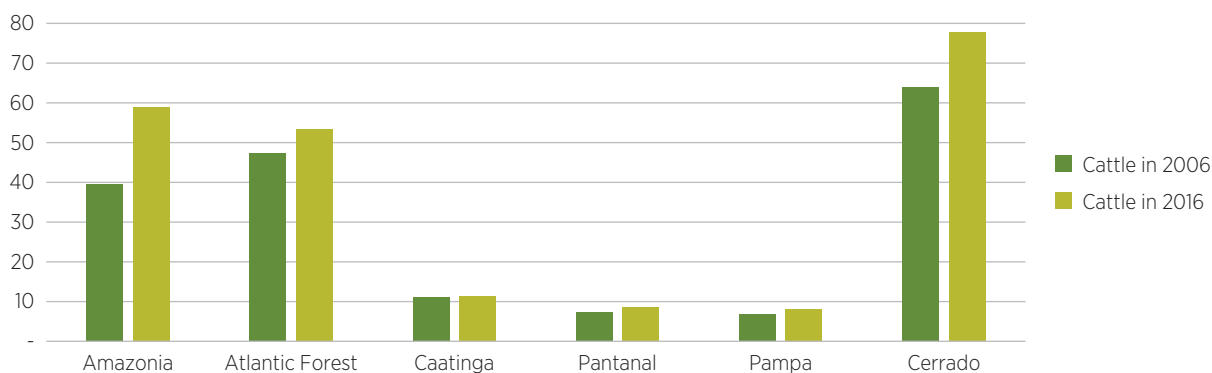
**FIGURE 4** Brazil’s Deforestation Hot Spots, 2000–2014



Source: World Resources Institute, [bit.ly/GFWHotspots](http://bit.ly/GFWHotspots)

**FIGURE 5** Heads of Cattle in Brazilian biomes, 2006 and 2016

in millions



Data Sources: Agricultural Census of Brazil, 2006. IBGE, 2016.

A second major source of land-use conversion in the Cerrado involves the rapid expansion of cattle ranching. This expansion has been led by the state of Mato Grosso, which now has over 30 million head of cattle. This is in addition to the state's 9.4 million hectares of soybean plantings (2017/2018 harvest<sup>10</sup>). Figure 5 reveals that the Cerrado leads all other Brazilian biomes in the total number of heads of cattle with nearly 80 million. Furthermore, much of the new cattle ranching expansion is being done with an inefficient use of land and only marginal improvements in cattle ranching productivity. Other causes of deforestation are the making of charcoal for iron ore smelting plants, industrial mining, infrastructure development and rapid urbanization.

Human-induced burnings in the Cerrado have a long history. For centuries, indigenous peoples have managed their habitats with the select use of fire to stimulate the flowering and fruiting of plants, to attract and hunt game and to clear away pests, as well as in rituals. By performing small-scale burnings in a mosaic pattern, areas that had been previously burned were given time to recover. With the advent of large-scale sedentary agriculture in the Cerrado, however, the frequency and extent of burnings increased dramatically over the past fifteen years with subsequent rises in the rates of deforestation and environmental degradation. Between 2001 and 2017, an average of 356,264 km<sup>2</sup> per year was burned in the Cerrado, a figure which includes areas that are burned yearly and bi-yearly.<sup>11</sup>

## Public Policies for the Protection of the Cerrado

In spite of the Cerrado's enormous biological importance, there are few programs geared directly to protect this endangered biome and to put it on a path of sustainable development, with only 8.2% of the biome being formally protected by parks or indigenous territories. In September 2006, the president of Brazil established the National Commission for the Sustainable Cerrado Program (CONACER). The Commission is mandated to promote the integration of programs, projects and sectoral policies related to the Cerrado biome.



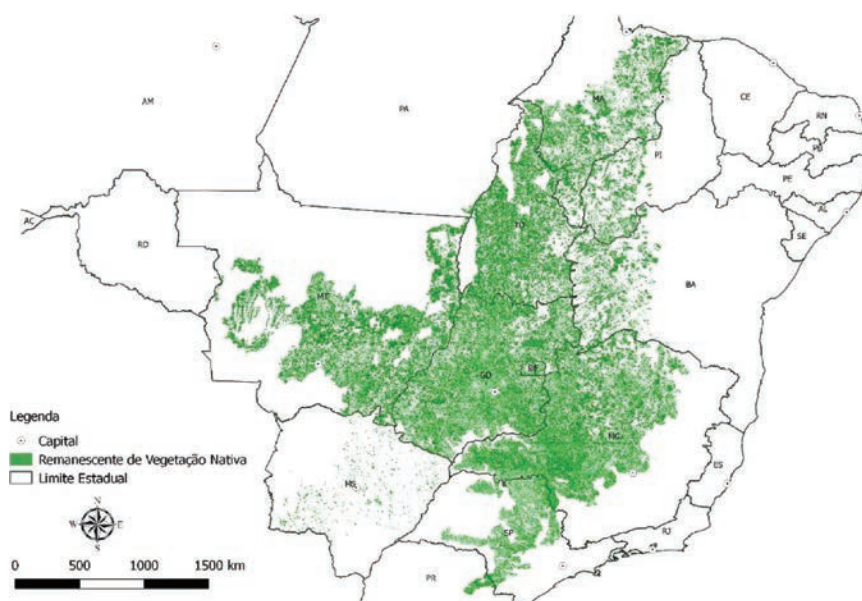
Recent support for strengthening the biome's protected areas has come from the Sustainable Cerrado Program, which receives funds from the Global Environment Facility (GEF). The GEF Cerrado project has four sub-projects and is designed to enhance biodiversity conservation and improve the environmental and natural resource management of the Cerrado by local communities in Brazil's territory through the creation, implementation and strengthening of protected areas, the enhancement of social participation in protected area management and promotion of sustainable use practices.

Most of the land in the Cerrado, including the majority of its remaining forests, are privately owned. According to federal Forest Code, all privately-held farms or ranches must have between 20% to 35% of their total acreage demarcated as a "Legal Forest Reserve" which is subject to a specific set of environmental regulations. A separate environmental designation – "Permanent Protection Areas" – includes forests located in headwater areas and riverine lowlands and must, according to federal law, be protected.

The Rural Environmental Cadastre (CAR) was created in 2009 and became mandatory with the enactment of the Forest Code in 2012. CAR is designed to provide a common national instrument for the environmental regulation of rural properties and has become an important source of information regarding remaining forests on privately-held lands that are scattered throughout the Cerrado biome (Figure 6). The Action Plan to Prevent and Control Deforestation and Fires in the Cerrado Biome (PPCerrado) was launched in 2010 with the goal of promoting sustained reductions in the rate of deforestation and forest degradation, as well as in the incidence of fires in this biome.

The Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture (ABC Plan) of 2010 seeks to ensure the implementation of sustainable management practices which reduce

**FIGURE 6** Remnants of Native Vegetation According to CAR Registries, July 2017





greenhouse gas emissions and enhance atmospheric CO<sub>2</sub> uptake on vegetation and land used by the Brazilian farming and ranching sector. The National Plan on Climate Change defines that Brazil's goal is to achieve a 40% reduction in deforestation in the Cerrado, based upon the 1999–2008 average (15,700 km<sup>2</sup>)<sup>12</sup> by the year 2020.<sup>13</sup> For this target to be met the deforestation rate in the Cerrado needs to be reduced to 9,420 km<sup>2</sup> by 2020.<sup>14</sup> In 2015, 9,483 km<sup>2</sup> of the Cerrado was deforested, which was considerably higher than the 6,207 km<sup>2</sup> deforested in the Amazon that year (see Figure 3).<sup>15</sup>

## The Forest Investment Program

The 756.2 million dollar<sup>16</sup> Forest Investment Program (FIP) is a funding window of the Climate Investment Funds (CIF) that provides grants and low-interest loans to partner countries to assist them in addressing the drivers of deforestation and forest degradation. These funds are channeled through multilateral development banks (MDBs) and have as their overall objective to “provide financial and knowledge support for country-led initiatives to reduce greenhouse gas emissions from deforestation and forest degradation and to promote improved sustainable management of forests.”<sup>17</sup>

In 2011, the FIP Sub-Committee selected eight pilot countries – Brazil, Burkina Faso, Democratic Republic of Congo, Ghana, Indonesia, Lao People's Democratic Republic, Mexico and Peru – to initiate its investments. In 2015, FIP added 15 countries to its portfolio,<sup>18</sup> for a total of 23 countries.

The FIP is innovative in several respects. It aims to invest inside and outside forests, to bring all relevant stakeholders to the discussion and to enhance overall forest governance. Over 42% of global FIP investments are for landscape approaches, followed by the thematic areas of Capacity building, institutional strengthening and governance reform (22%); Sustainable forest management (19%); Indigenous peoples and local communities (11%); and Forest monitoring (6%).<sup>19</sup> Gender and Knowledge management serve as two cross-cutting themes for all country programs.

FIP takes a programmatic approach by looking across forest landscapes in an integrated, cross-sectoral manner. This often requires the development of inter-ministerial coordination between the forest and agriculture governmental agencies. FIP also employs a methodology of multi-stakeholder engagement, often amongst stakeholders with conflicting views regarding forests. A separate Dedicated Grant Mechanism (DGM) is available to each FIP country, where the funds are disbursed directly to indigenous peoples and local communities that will enable them to strengthen their participation in the FIP and other REDD+ processes (see [www.dgmglobal.org](http://www.dgmglobal.org)).



# CASE STUDY

## BRAZIL INVESTMENT PLAN

### Development of the Plan

Once Brazil was invited to become a FIP Pilot country, negotiations began in order to decide which issues the plan should address, where projects should be implemented and how the funds should be allocated. Negotiations and consultations lasted a year and a half and culminated in the drafting and approval of the Brazil Investment Plan (BIP) in 2012. The development of the BIP was a country-directed process led by Brazil's Ministry of Finance, a powerful actor within the Brazilian federal government, and brought the Ministry of Agriculture, Livestock and Food Supply (MAPA), the Ministry of Environment (MMA) and the Ministry of Science, Technology, Innovation and Communication (MCTIC) together in a novel inter-ministerial arrangement. BIP's interagency cooperation was focused upon building synergies between the projects to maximize the impact of a larger set of policies aimed at reducing deforestation in the Cerrado biome, such as the PPCerrado and the Sustainable Cerrado Programs.

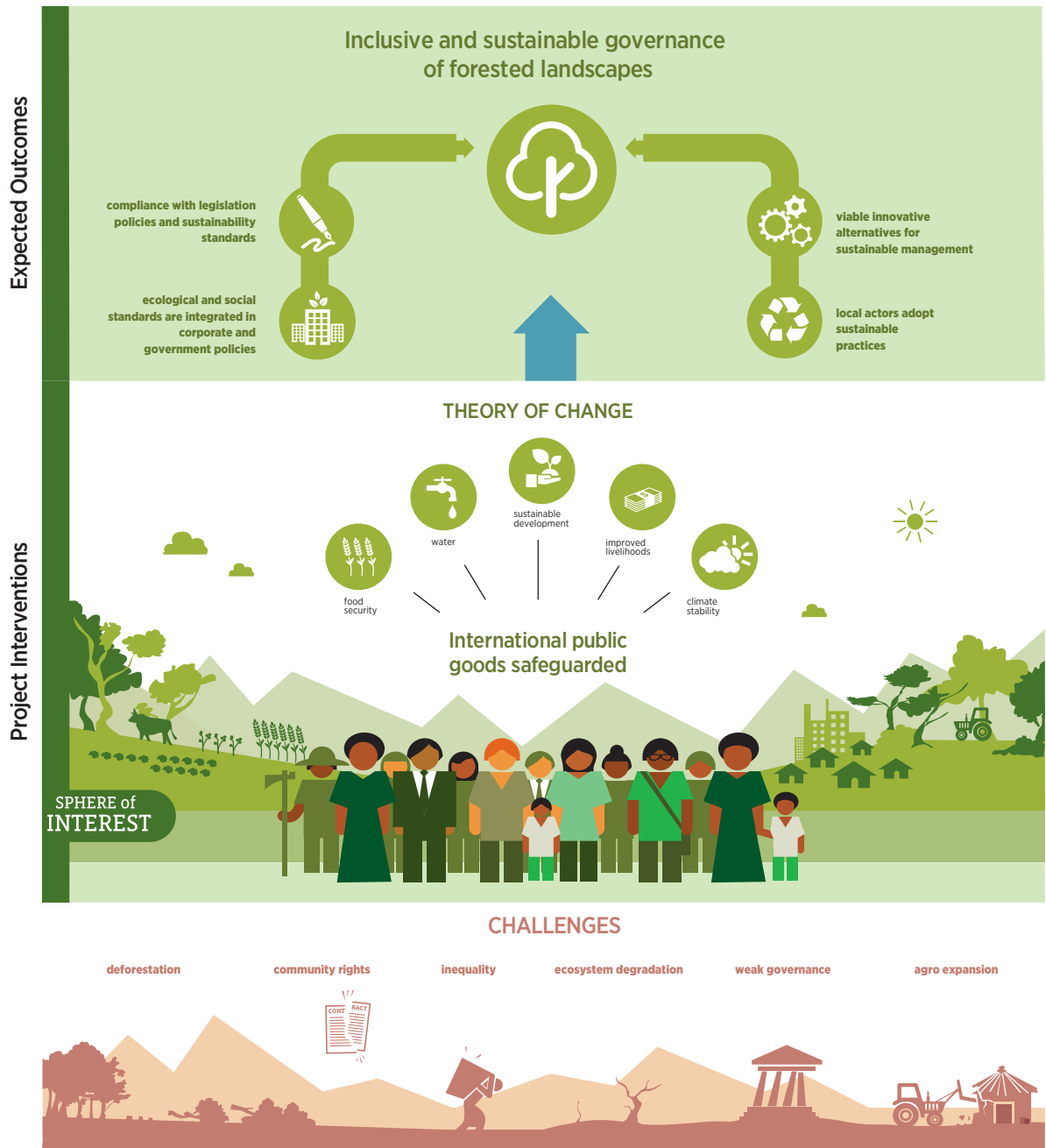
In the initial round of internal negotiations, over 30 proposals from different ministries were discussed before arriving at the decision on the four projects which comprised the original Plan. The Ministry of Environment (MMA), for its part, wanted to invest in the Amazon rainforest, but was subsequently convinced of the urgency of the Cerrado's environmental crisis and its greenhouse gas emissions reduction potential. The Brazilian government's decision to invest in the Cerrado biome was a strategic choice to work with a threatened biome and bring semi-arid tropical forests into climate change mitigation efforts. It was also understood that a tailor-made approach would need to be developed to address these drivers of deforestation and reduce greenhouse gas emissions in this unique biome.

### Theory of Change

The high rate of deforestation and forest degradation in the Cerrado pose serious climate change problems for Brazil since deforestation and forest degradation is one of Brazil's principal sources of greenhouse gas emissions. At the same time, the rapid increase in Brazilian soybean and cattle production has been one of the primary drivers of economic growth in Brazil, with the expansion into the Cerrado as the major impetus for this new growth. These competing forces have generated tensions between the agricultural sector and the environmental sector that hinder effective climate change action in Brazil.

The BIP investments are designed to strengthen policy instruments and provide strategic tools and programs that can mediate existing land-use conflicts and establish a framework for the development of a low-carbon economy that meets the needs of the agricultural sector and allows Brazil to meet its Nationally Determined Contributions to the UNFCCC negotiations.

**FIGURE 7** BIP Theory of Change



Source: Adapted from Forested Landscapes for Equity.



The basic hypothesis of the BIP is that integrated planning and implementation of sustainable forest and agricultural policies can generate the enabling conditions for transformational impact in the Brazilian forest sector at the level of the Cerrado biome (Figure 7). The long-term goal is to develop a new paradigm that combines modern and sustainable agriculture with the conservation of natural resources and the promotion of human well-being; i.e. productive, well-managed forests with a low-carbon footprint.

## Investment Portfolio

The BIP outlines the priorities and proposed investment projects to be designed and implemented with FIP funds. It seeks to build synergies amongst public policies in order to maximize their positive impact. The investment portfolio identified two priority thematic areas:

1. **Management and use of anthropogenic areas:** Through the adoption of sustainable agricultural practices, this priority area seeks to preserve natural resources and reduce greenhouse gas emissions in the Cerrado, while maintaining or increasing productivity and profitability.
2. **Production and management of forest information:** By filling crucial gaps in forest and forest fire information for the Cerrado biome, this priority area will refine biodiversity protection efforts and allow for quicker, more precise fire prevention interventions.

As of 2018, the BIP portfolio was comprised of six projects totaling \$94.98 million in investments (\$62.5 million in grants and \$32.48 million in loans) in the Cerrado. These investments are being supplemented by the \$6.5 million Dedicated Grant Mechanism (DGM-Brazil) which provides financial and technical support to indigenous peoples, *quilombos*<sup>20</sup> and other traditional communities in the Brazilian Cerrado in their efforts to avoid deforestation and forest degradation, promote the conservation of forests and achieve increased social inclusion (see <https://dgmbrasil.org.br>). The BIP projects involve coordinated actions by the Environment, Agriculture, and Science and Technology Ministries, while the Ministry of Finance serves as the National Focal Point Coordinator and represents Brazil as one of the twelve voting members of FIP's Sub-Committee.

Two private sector set-aside loans totaling \$18 million were planned as complementary investments to the BIP. A \$15M loan for a Teakwood Commercial Reforestation project to be financed by the International Finance Corporation (IFC) never got off the ground, while a \$3 million loan for Macauba Palm Oil in Silvicultural Systems, financed by the Inter-American Development Bank (IDB), is still in its initial stages of development. While the global FIP program originally conceived of private, set-aside loans as a means of generating synergies between public and private sectors, this approach has not been generally successful at a global level. In this regard, it is important to note that Brazil was one of only three FIP pilot countries that was able to reach the approval stage for a private sector set-aside project.

A brief description of the five FIP projects and the DGM-Brazil project under implementation are presented below, along with their Brazilian acronym of reference:

- i. **FIP-CAR:** The national Rural Environmental Cadastre (CAR) is an electronic register of rural landholdings maintained by an official environmental entity aimed at effectively monitoring, supervising and ensuring environmental compliance by landowners. The FIP-CAR project is focused on strengthening the State Environmental Agencies' capacity to implement the CAR system through technical and financial support and the training of stakeholders. The project is also expanding the number of CAR registries in priority municipalities, i.e. those which contain a high percentage of degraded or deforested lands or are located in threatened micro-watersheds.
- ii. **FIP-ABC:** The national ABC Plan for Low Carbon Emission Agriculture was launched in 2010 in an effort to achieve the national commitments for the mitigation and adaptation of climate change. The FIP-ABC project is expanding this program to private landholders in the Cerrado and providing training and technical assistance in new technologies such as the recovery of degraded pasture land, crop-live-stock-forest integration, no-tillage planting, biological nitrogen uptake, planting of commercial forests and treatment of animal waste.
- iii. **FIP-Forest Inventory:** This project is conducting a methodologically rigorous inventory of Cerrado forests and generating up-to-date information on forest cover and land use, forest carbon stocks above and below ground, forest degradation and fragmentation, occurrence of endangered or threatened species, and socio-economic data on forest use by local communities. The FIP-Forest Inventory project also promotes the consolidation of the National Forest Information System (SNIF), the main platform for the analysis and dissemination of information and management of knowledge about the country's forest resources.
- iv. **FIP-Cerrado Systems:** This project designed and is now implementing a deforestation monitoring system of the Cerrado, including annual deforestation mapping and near real-time deforestation detection, and is training selected stakeholders on access, interpretation and use of the information generated. The FIP-Cerrado Systems project is also developing a remote-sensing, early warning system for forest fire prevention that includes a fire ignition, spread and carbon model and applies a greenhouse gas emissions estimation system to the Cerrado.
- v. **FIP-Coordination:** This project is dedicated to the overall program management of the Brazil Investment Plan by a civil society environmental organization under the supervision of the Ministry of the Environment.
- vi. **DGM-Brazil:** This project was designed in direct consultation with indigenous peoples and other traditional communities in the Cerrado and seeks to reduce deforestation and forest degradation through the effective participation of indigenous peoples, quilombolas and agroextractivist<sup>21</sup> communities in actions of capacity building, institutional strengthening and financial support to local organizations. The DGM-Brazil's small grants program is managed by a civil society alternative agricultural association and provides funding for natural resource management, sustainable production and territorial protection.

A new FIP grant is currently under preparation and represents a second-generation project that seeks to build upon the results of the FIP-CAR and FIP-ABC projects:



- vii. **FIP-Landscapes:** This project will employ an Integrated Landscape Management approach in which conservation and production units with the agricultural matrix are managed jointly for long-term sustainability. The FIP-Landscapes project will promote institutional development and capacity building in the agricultural and environmental sectors and will attempt to mainstream sustainable, low-carbon practices in strategically selected watersheds throughout the Cerrado.

Additional benefits to be derived from the FIP and DGM investments include biodiversity conservation, institutional strengthening, increased agricultural and livestock yields and climate change mitigation and adaptation actions. Table 1 provides essential data for the six FIP projects and the DGM-Brazil project.

**TABLE 1 Projects of the Brazil Forest Investment Plan and the DGM**

| Thematic Area             | Management and Use of Anthropogenic Areas                            |  |  | Production and Management of Forest Information                                    |  | Program Management                              | Special Programs   |
|---------------------------|--|--|--|--|--|---|--|
| Project                   | (1)<br>FIP-CAR   | (2)<br>FIP-ABC   | (3)<br>FIP-Landscapes*   | (4)<br>FIP-Forest Inventory  | (5)<br>FIP-Cerrado Systems   | (6)<br>FIP-Coordination                         | (7)<br>DGM-Brazil  |
| Title                     | Environmental Regularization of Rural Lands in the Cerrado of Brazil | Sustainable Production in Areas Previously Converted to Agricultural Use | Integrated Management of Vegetation Cover of the Cerrado Biome | Forest Information to Support Public and Private Sectors in Management Initiatives | Development of Systems to Prevent Forest Fires & Monitor Vegetation Cover in the Brazilian Cerrado | Administration of the Brazilian Investment Plan | Dedicated Grant Mechanism for Indigenous Peoples           |
| Government Ministry       | Environment  | Agriculture  | Agriculture/ Environment                                       | Environment  | Science and Technology   | Environment                                     | N/A  |
| Executing Agency          | SFB - Brazilian Forest Service                                       | SENAR - National Rural Learning Service                                  | GIZ - German Technical Cooperation Agency                      | SFB - Brazilian Forest Service   | Fundepe – Fundação de Desenvolvimento da Pesquisa  | FUNATURA - Pro-Nature Foundation**              | CAA/NM - Center for Alternative Agriculture of North Minas |
| Key stakeholders          | Rural landowners   | Cattle ranchers  | Farmers and ranchers   | Forest sector  | Forest sector  | Climate change sector                           | Indigenous peoples and traditional communities             |
| Start/projected end dates | 2015–2020  | 2014–2018  | 2018–2023  | 2016–2020  | 2016–2020  | 2017–2022                                       | 2015–2020  |
| Development Bank          | IBRD   | IBRD   | IBRD   | IDB  | IBRD   | IBRD  | IBRD   |
| Funding (US\$)            | Grant  | 10,700,000   | 25,000,000   | 16,550,000   | 9,250,000  | 1,000,000                                       | 6,500,000  |
|                           | Loan   | 32,480,000   |  |  |  |   |  |

\* This project is under preparation and awaiting final approval.

\*\* The Pro-Nature Foundation is scheduled to begin its coordination activities in the second semester of 2018.

# STRATEGY:

## FOCUS ON THE SEMI-ARID FORESTS OF THE CERRADO

A biome-level approach to climate change investments operates at a geographic scale that is larger than landscapes or ecosystems and allows Brazil to formulate a set of policies that can be applied at this scale, thereby increasing the potential for generating transformational impact. This new scale of action, however, also requires the development of new technological systems for inventory, mapping and monitoring the vast area of a biome so as to better understand the interrelated dynamics of multiple ecosystems undergoing rapid change.

The choice to make forest investments in the Cerrado biome, instead of in its more famous neighbor the Amazon, was strategic for several reasons and charted a new path for Brazil's climate change actions. BIP investments in the Cerrado did not adopt the common approach of reducing deforestation through the creation and consolidation of protected areas, but rather chose to work in an expanding agricultural frontier with high rates of land-use conversion. The BIP investments share a broad-based approach to greenhouse gas emissions which not only focuses on carbon dioxide (CO<sub>2</sub>) emissions, but also seeks to reduce methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions that are associated with agriculture and ranching.

Working with the Cerrado's dry woodland forests, where much of the carbon is stored underground, requires an increased attention to protecting water resources and the development of watershed-level policies. To this end, the FIP-Landscapes project was designed and, if approved, will adopt an integrated landscape management framework using a prioritized watershed approach<sup>22</sup> which considers such factors as natural vegetation cover rate, presence of headwaters, stocking density of cattle and percentage of anthropogenic areas per watershed when selecting its intervention areas.



This biome-level approach also increased the visibility of the Cerrado as a forest and climate change issue in the international arena and gave a renewed sense of urgency to reversing current trends before the level of destruction reaches a tipping point that could produce desertification. And while there is no scientific consensus regarding when this tipping point would be reached, initial indicators of desertification – such as the drying out of the *veredas*<sup>23</sup> – and significant disruptions in the biogeochemical functioning of Cerrado ecosystems have already been detected.<sup>24</sup>



# INSTITUTIONAL ARRANGEMENT: CROSS-SECTORAL, INTER-MINISTERIAL GOVERNANCE

In order to build a successful inter-ministerial arrangement, the BIP faced the institutional challenge of overcoming disagreements between the Ministry of Agriculture, Livestock and Food Supply (MAPA) and the Ministry of Environment (MMA) over deforestation issues. These political tensions, however, were not a technical barrier to the subsequent development of an integrated approach to deforestation in the Cerrado, which was strengthened even further with the incorporation of the Ministry of Science, Technology, Innovation and Communication (MCTIC) into the Inter-Ministerial Committee.

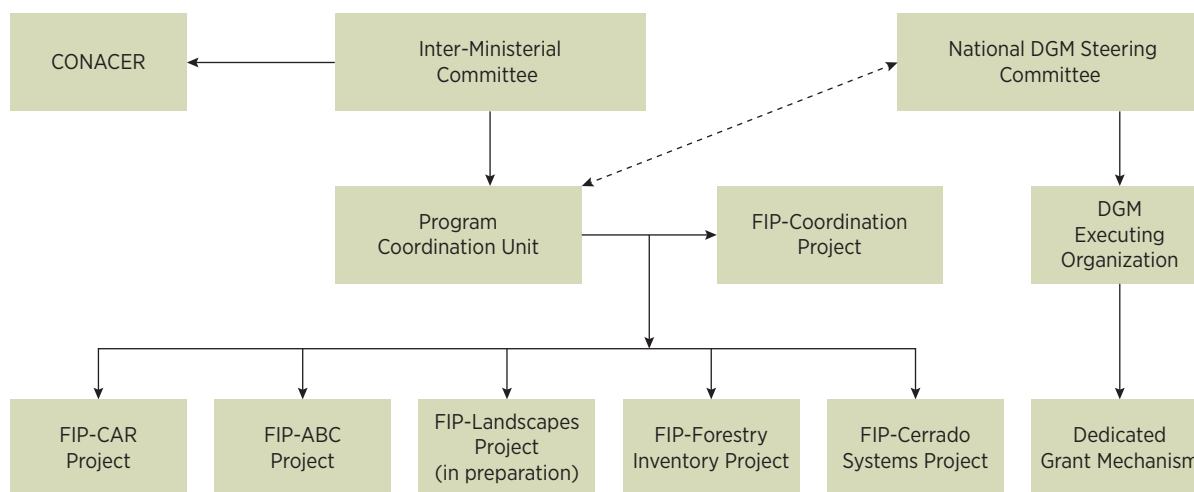
The leadership position played by the Ministry of Finance, the fourth ministry to comprise the Brazil FIP program, was a key factor in negotiating and installing this institutional arrangement. At the time of the development of the BIP, a representative of the Ministry of Finance was co-chair of the FIP Sub-Committee and was a prime mover in articulating Brazil's vision for the program at both the global and national levels. The Ministry of Finance, which represents Brazil in all its international financial agreements, brought together four ministries to negotiate the details of the plan and the inter-ministerial arrangement.

The Ministry of Finance was able to function as a type of “honest broker” in these negotiations due to its financial neutrality – it would not receive any project funds from the BIP – and its political clout, as one of the most powerful ministries within the Brazilian federal government. Another factor in achieving this positive result was the incorporation of Ministry of Science, Technology, Innovation and Communication (MCTIC) into the BIP, which brought a strong scientific perspective to the program through the production and dissemination of crucial information on vegetation cover and forest fires.

In 2014, an Inter-Ministerial Committee was established to oversee the BIP, with the Ministry of Environment serving as the Program Coordination Unit. The Inter-Ministerial Committee presents annual reports to the National Commission for the Sustainable Cerrado Program (CONACER), which is mandated to promote the integration of programs, projects and sectoral policies related to the Cerrado biome. Figure 8 presents the organizational chart of the BIP.

This cross-sectoral, inter-ministerial institutional arrangement has faced many bureaucratic difficulties. Due to distinct regulatory requirements within the Brazilian government, international loans require a more extensive approval process than international grants, which delayed the initiation of the FIP-CAR project. The FIP-Coordination project, for its part, was initially submitted to the Brazilian government as a grant to be internalized in the MMA budget and, after two years of processing, needed to restart the entire approval process as a separate

**FIGURE 8** Organizational Chart of the Brazil Forest Investment Program and DGM-Brazil



grant to be managed by a non-government institution with extensive experience with Cerrado and Government partnership.

In spite of these difficulties, these ministries began working together on a regular basis and were able to find common ground around the broader goal of low-carbon development. They also established personal relationships that stretched across the four ministries and helped to build mutual trust and confidence amongst the technical staff of each project, even though their respective ministries experienced numerous top-level changes. Bernadete Lange, FIP Focal Point for the World Bank, summed up this assessment: “The most important legacy of the Brazil FIP program has been the way it placed everyone working together towards a common set of goals.”

Three years after the initial BIP was developed, a second-generation project – FIP-Landscapes – was designed to build upon the results of the first two projects of the Management and Use of Anthropogenic Areas thematic area. This project is jointly coordinated by MMA and MAPA, an arrangement that was facilitated by the existence of the Inter-Ministerial Committee.

At the project level, each ministry was responsible for negotiating its respective projects with the multilateral development banks that were funding them. This allowed for experimentation with new financing mechanisms whereby some of the projects channeled their funds through private organizations, which served to streamline their disbursement and accounting mechanisms.



# ENGAGING WITH STAKEHOLDERS

## Soybean Farmers and Cattle Ranchers

Cattle ranchers and soybean farmers – both large landowners and family farmers – are not typical protagonists of forest-based climate change actions, but they are central to the success of the Brazil FIP investments. By addressing climate change on an expanding agricultural frontier, a non-traditional approach to climate change issues becomes necessary. The engagement with and participation of rural landowners expands the scope of stakeholder involvement well beyond the traditional forest sector to include both large and small private-sector agricultural producers and, in the process, transforms them into potential agents of change.

In this approach to climate change mitigation, production and conservation activities are placed within a single framework so that all stakeholders involved can benefit. In order to be successful, however, this environmental strategy needs to go beyond a regulatory model, which is often fraught with tension, and incorporate technical and economic incentives to increase private landowners' participation in greenhouse gas emission reduction efforts.

The FIP-ABC project provides technical assistance to farmers and ranchers who are adopting low-carbon emission agriculture and ranching techniques. By providing a productive alternative to existing practices, these farmers and ranchers will be able to make the transition without losing their livelihood. As Alexandre Gessi, project coordinator of the FIP-ABC project, stated: "A producer will only adopt a new environmental technology if it offers the opportunity for economic gain." The goal is not to completely halt land-use conversion, but rather to do it in a planned, legal manner with an eye on long-term environmental impacts and provide a more complete approach to climate change mitigation.

## Indigenous Peoples and Traditional Communities

Many of the remaining forests of the Cerrado are located on the communal territories of the region's indigenous peoples and other traditional communities such as *quilombos* and agroextractivist communities. The DGM for Brazil focuses on the needs of these groups in an effort to incorporate them into the country's climate change efforts. The project was designed by indigenous peoples and local communities on the basis of their expressed needs through a consultation process that involved the convening of five seminars, held in different sub-regions of the vast Cerrado biome, with leaders of representative local community associations and region-wide networks.

The Brazil DGM operates independently of the Brazil FIP institutional arrangement and is coordinated by a National Steering Committee consisting of three representatives of indigenous peoples, three representatives of traditional communities and three representatives from the Ministry of Environment. While government participation in the Steering Committee is not a common practice, in the case of Brazil, representatives of local communities and regional networks insisted upon government participation using the rationale that this would facilitate closer interactions with government agencies over the life of the project and would foster continued involvement of government agencies after the project ended.

The project is managed by the Center for Alternative Agriculture of North Minas (CAA/NM), a non-governmental organization with long-term experience in working with traditional peoples in the Cerrado region. The nucleus of the project is a small-grants program that provides support for local organizations in the areas of: (i) Natural Resource Management; (ii) Market-oriented Production; and (iii) Institutional Strengthening. A first call for proposals in 2016 brought in over 150 requests, of which 41 sub-projects were funded: 24 for indigenous peoples; 8 for *quilombolas* and 9 for traditional communities. In 2017, a second call for proposals was launched and received 106 requests. Nineteen of these have been pre-selected for financing and are currently undergoing due diligence analysis.

The sub-projects for Natural Resource Management are focused on actions for the recovery of degraded lands, the aquatic recharging of headwaters and wetlands, the installation of plant nurseries for native species and guaranteeing food security at the community level. The Market-oriented Production sub-projects work towards improved production and marketing of a host of traditional Cerrado products such as babassu<sup>25</sup> palm oil, pequi<sup>26</sup> fruit and baru<sup>27</sup> nuts. The Institutional Strengthening sub-projects are supporting the Regional Indigenous Peoples Organization and the *Rede Cerrado* network for the marketing of locally-produced Cerrado products.



One of the most positive results of the DGM-Brazil project has been the way that local ethnic communities – indigenous peoples, *quilombolas* and traditional communities – have gained a new space for collaboration and interaction with each other. This has allowed them to identify common issues and problems and provided a forum for addressing them collectively. Another innovative aspect of the DGM program has been the undertaking of several exchanges between DGM projects in other FIP countries as a means of sharing methodologies and lessons learned and building international relationships. The DGM-Brazil project has conducted exchanges with programs of Mozambique, Indonesia and several Latin American countries.

# POLICY APPROACH:

## CONSOLIDATING EXISTING PUBLIC POLICIES

The motto of the policy approach of the BIP could be stated simply as “don’t reinvent the wheel”. The Brazil FIP program decided to build upon existing public policies and government programs rather than design and implement new ones, thus avoiding the time-consuming process of formulating and testing new policies. By moving directly into actions of policy implementation and expansion, the BIP provided for increased policy efficiency and impact.

The Rural Environmental Cadastre was created in 2009 and enshrined into law by the new Forest Code in 2012. The FIP-CAR project is designed to increase the number of land holdings contained in this registry throughout the Cerrado biome and consolidate it as the primary source of environmental regulatory information for privately-held lands. The Ministry of Agriculture’s ABC Plan for Low-carbon Emission Agriculture was also in operation when the BIP began and the FIP-ABC project has served to strengthen this plan through the strategic deployment of technical assistance.

The Brazilian Forest Service’s Forest Inventory also existed prior to the BIP and the FIP-Forest Inventory project has provided it with standardized methodological rigor for all the Cerrado states. The Ministry of Science and Technology’s existing early warning system for forest fires is being expanded by the FIP-Science and Technology project to include new data regarding the risk and trajectory of the forest fires.

The FIP investments are not designed to supplant government funding, but rather to strengthen existing government policies and programs. The national CAR program, for example, is funded by the Brazilian government through its regular budgetary process, while FIP funds are providing critical support for expanding this regulatory instrument throughout the Cerrado. FIP provides another type of complementary support through the refinement and expansion of successful monitoring tools. The FIP-Cerrado Systems project is adapting and applying the methodology of the government’s PRODES project (Monitoring Amazonian Forest Cover by Satellite) to the Cerrado biome. FIP projects also receive financial and in-kind counterpart support from the Brazilian government.

FIP projects are at the leading edge in the effective implementation of national environmental and climate change policies such as the National Climate Change Policy (PNMC), the Forest Code and the National System of Forest Information (SNIF). Another set of federal public policies related to Brazil’s ethnic diversity provides opportunities for BIP to strengthen the National Policy on Territorial and Environmental Management of Indigenous Lands (PNGATI), the National Policy for the Sustainable Development of Traditional Peoples and Communities (PNDSPCT) and the National Strategic Plan for Protected Areas (PNAP).



# PROGRAM DESIGN:

## BUILDING SYNERGIES

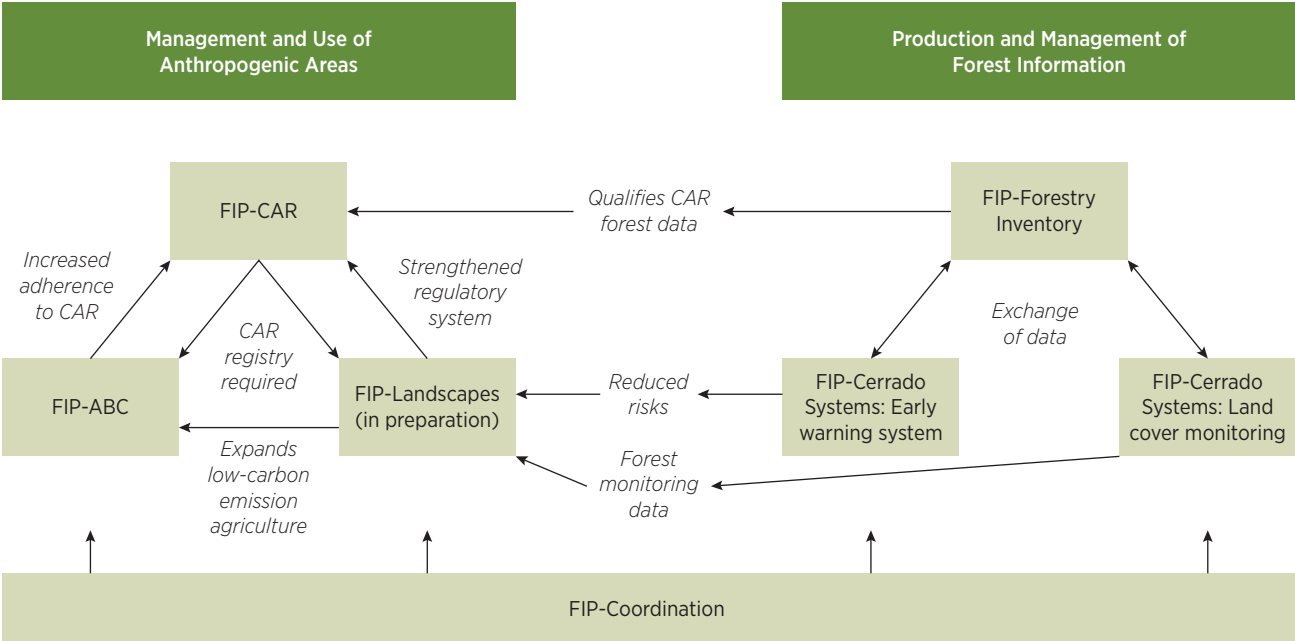
The Brazil FIP program is designed to generate synergies between different agencies and stakeholders at the biome level in order to improve the sustainability and efficiency of forest resource management and land use in the Cerrado and increase the combined impact of the projects. Synergy, as used here, is defined as the interaction of elements that when combined produce a total effect that is greater than the sum of the individual parts.

The FIP-CAR project is the regulatory anchor of the entire BIP program. By assuring environmental compliance in the registry of rural properties, FIP-CAR enables producers to access resources from the ABC Plan credit lines which can be used to support the recovery of Legal Forest Reserves and Permanent Protection Areas. Registry in the CAR is also a prerequisite for participation in the FIP-Landscapes project which will strengthen the land management capacities of producers and provide for technology transfers to landholders through field technicians trained in low-carbon emission agricultural practices.

The FIP-Forest Inventory project updates and expands information on areas with remaining forest mapped by CAR by supplying data on forest density and diversity. In the FIP-Cerrado Systems project, the monitoring and accountability chain of deforestation and illegal fires will become a powerful instrument when the CAR and satellite detection systems are joined. By contributing to preventing fires and promoting natural regeneration in the Cerrado, the FIP-Cerrado Systems project can reduce the risk of losing natural areas as well as minimize losses for Cerrado farmers and ranchers, thereby contributing to the FIP-ABC project. Figure 9 visualizes some of the key feedback flows between FIP projects and identifies their principal synergistic effects.

Many of these synergies will take time to be realized. The initial data from the Forest Inventory project is only now becoming available and, as such, it is not ready to be adequately processed by other projects. Meanwhile, the synergies from the joining of the CAR with the satellite detection system will only be possible when that system is fully operational. Thus, the framework for the production of synergies is in place, but the effectiveness of these synergies can best be assessed in a final evaluation of the BIP.

**FIGURE 9 Synergies between Brazil FIP Projects**



# LESSONS LEARNED

The Brazil Investment Plan is an ambitious and complex effort by the Brazilian government to reduce greenhouse gas emissions through a focus on making agricultural and ranching practices more sustainable. At the midpoint (2018) of this decade-long BIP process, this case study identified several promising approaches and lessons learned that may be useful to other FIP countries as they grapple with many of these same issues.

A first lesson focuses on the importance of identifying the country's primary sources of forest-related greenhouse gas emissions and the need to design cross-sectoral programs to directly address them. The BIP posits deforestation driven by agricultural expansion and land-use change as an essential part of an effective climate change policy for Brazil. The BIP works jointly with the agriculture, ranching, forestry and conservation sectors within a single policy framework. This process has directly involved private rural landowners in new climate change actions, transforming them into important stakeholders in the process.

A second lesson is that working at a large geographic scale can facilitate the generation of synergies between national climate change actions. The selection of the Cerrado biome as the focus of the BIP, for example, thrust this savanna-forest landscape into the forefront of Brazil's forest and climate change agenda, which has long been dominated by programs for the Amazon rainforest biome. Though oft-neglected in the global climate change agenda, dry tropical savanna forests can make important contributions towards biodiversity conservation and reducing greenhouse gas emissions.

A third lesson is that inter-ministerial coordination and cooperation is necessary in order to overcome built-in bureaucratic obstacles. One noteworthy aspect of the inter-ministerial cooperation in the BIP has been how representatives from the Ministries of Environment and of Agriculture, which had long been at odds over agricultural and conservation policies, were able to work together and build a joint space of collaboration around the notion of low-carbon agriculture. The coordinating role of the Ministry of Finance and the scientific role of the Ministry of Science and Technology were also essential to the success of the Inter-Ministerial Committee, which oversees the entire Brazil Forest Investment Program.

A fourth lesson is that the use of existing public policies can provide for a quicker, more efficient, implementation of coordinated climate change actions. FIP-Brazil's decision to strengthen existing public policies, instead of formulating and testing new ones, has served to expand and consolidate the regulatory and technical framework for climate change. Policy instruments that have been strengthened by the BIP are the Rural Environmental Cadastre, the ABC Plan for Low Carbon Emission Agriculture and the National Forest Information System.



Meanwhile, the highly successful PRODES remote-sensing monitoring system for Amazonian forest cover is being expanded to the Cerrado biome by the FIP-Cerrado Systems project.

The BIP also contributes to and collaborates with other federal and state programs that work with the Cerrado, such as the PPCerrado Program, the Sustainable Cerrado Program and the National Plan for Adaptation to Climate Change. This fourth lesson harbors a cautionary note: Brazil was successful in implementing existing policies because it relied upon an excellent set of environmental policies that had been put in place over the previous two decades. In FIP countries where this legal and institutional structure is lacking or inadequate, it may be necessary to develop new public policies and institutional structures first.

A fifth lesson is that a programmatic approach to forest investments may not be sufficient to eliminate institutional bottlenecks that can hinder effective implementation. The complex institutional and financial arrangements required by the Brazilian government and multi-lateral development banks, for example, have often resulted in bureaucratic delays, with detrimental effects on the overall functioning of the program. The distinct operating procedures and administrative requirements of four ministries and two multilateral development banks generated an intricate bureaucratic maze that slowed down the approval process of the FIP projects. The practical result has been a four-year-long, roll-out time (2014–2018) for these six projects.



# LOOKING TOWARD THE FUTURE

As the Brazil Forest Investment Program looks toward the future, it will face severe fiscal constraints, stemming from Constitutional Amendment #95 of 2016, which froze government spending for 20 years at inflation rates and required that international donations and loans be counted against the established budgetary limits of each Ministry. Adequately managing this complex internal political and economic context will be one of the BIP's biggest challenges in the coming years.

At the programmatic level, 2018 will be the first year in which all six FIP projects and the DGM-Brazil project will be operating simultaneously, which will increase the need for effective on-the-ground cooperation between all the projects and continued inter-ministerial coordination, in order to allow for the synergistic effects to be generated. Since the FIP-Coordination project is beginning implementation at the mid-point of the BIP process, it will need to move quickly to develop adequate mechanisms for program-level monitoring and global impact evaluation.

In order to evaluate the effectiveness of the changes produced by FIP-Brazil projects, one must consider the pace of social change which is generally slower than the three or four-year timeframe of FIP projects. FIP and DGM projects, for example, operate in remote rural areas that have many pressing needs which make implementation of the projects more difficult. Another issue involves the promotion of changes in deeply engrained productive behavior in which social and cultural change processes will take time to emerge. Meanwhile, institutional changes are often slowed by numerous bureaucratic processes.

In this situation, viable, sustainable solutions to current climate and forestry issues can only be realistically expected in the medium to long-term. The example of Amazon public policy work is instructive here since it continues to produce positive results after thirty years of investments. On the other hand, the Cerrado has only received significant environmental and climate investments for less than a decade and these will need to be given time to mature.

The Brazil Forest Investment Program represents an important and innovative addition to the Brazilian government's arsenal of programs designed to combat climate change through a robust, cross-sectoral approach that was applied to the Cerrado biome. BIP is trying to lay the foundation for a flow of new results and outcomes that make alternative, sustainable productive approaches more likely to be adopted, embedded and replicated in the coming years. In sum, to truly achieve long-term greenhouse gas emission reductions, Brazil will need to make an effective transition to a low-carbon paradigm of development.

## ENDNOTES

- <sup>1</sup> <https://globalforestatlas.yale.edu/amazon/forest-governance/brazil>
- <sup>2</sup> <http://biodiversitya-z.org/content/endemism>
- <sup>3</sup> <https://www.merriam-webster.com/dictionary/anthropogenic>
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- <sup>5</sup> Abdala, GC. *Análise energética de um cerrado e sua exploração por atividade de carvoejamento rústico*. Brasília: University of Brasília, 1993.
- <sup>6</sup> Calculated for above-ground carbon, which is where most of the Amazon's carbon is stored.
- <sup>7</sup> Asner, Gregory P. Et al. High-resolution forest carbon stocks and emissions in the Amazon. *PNAS* 107 (38) 16738-16742, 2010.
- <sup>8</sup> <https://www.ibge.gov.br>
- <sup>9</sup> <http://iopscience.iop.org/article/10.1088/1748-9326/aa5986>
- <sup>10</sup> [sfagro.uol.com.br/colheita-soja-mato-grosso](http://sfagro.uol.com.br/colheita-soja-mato-grosso)
- <sup>11</sup> <https://prodwww-queimadas.dgi.inpe.br/aq30m/#>
- <sup>12</sup> [http://www.planalto.gov.br/ccivil\\_03/\\_Ato2007-2010/2010/Decreto/D7390.htm](http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2010/Decreto/D7390.htm)
- <sup>13</sup> [http://www.planalto.gov.br/ccivil\\_03/\\_ato2007-2010/2009/lei/112187.htm](http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/112187.htm)
- <sup>14</sup> <https://ageconsearch.umn.edu/bitstream/211378/2/Cabral-Economic%20Costs%20of%20Limiting%20Deforestation%20in%20Brazil-927.pdf>
- <sup>15</sup> <http://www.observatoriodoclima.eco.br/desmate-no-cerrado-supera-o-da-amazonia>
- <sup>16</sup> [https://www.climateinvestmentfunds.org/sites/default/files/meeting-documents/fip\\_19\\_3\\_orr\\_1.pdf](https://www.climateinvestmentfunds.org/sites/default/files/meeting-documents/fip_19_3_orr_1.pdf)
- <sup>17</sup> FIP Design document, July 2009
- <sup>18</sup> Bangladesh, Cambodia, Cameroon, Congo Republic, Cote d'Ivoire, Ecuador, Guatemala, Guyana, Honduras, Mozambique, Nepal, Rwanda, Tunisia, Uganda and Zambia.
- <sup>19</sup> [https://www.climateinvestmentfunds.org/sites/default/files/meeting-documents/fip\\_19\\_3\\_orr\\_1.pdf](https://www.climateinvestmentfunds.org/sites/default/files/meeting-documents/fip_19_3_orr_1.pdf)
- <sup>20</sup> Communities that are descendant of runaway slave communities from Brazil's colonial period or rural Afro-descendent communities that remained on lands abandoned by former slave owners.
- <sup>21</sup> Agroextractivism is an adaptive method of Brazilian rural communities based upon collective-use rights to non-timber forest products combined with family agricultural and horticultural plots
- <sup>22</sup> [http://dados.gov.br/dataset/inde\\_1](http://dados.gov.br/dataset/inde_1)
- <sup>23</sup> Swampy plains between hills and rivers characterized by the presence of the Brazilian wine-palm (*Mauritia vinifera*).
- <sup>24</sup> Bustamante, MMC et al. Potential impacts of climate change on biogeochemical functioning of Cerrado ecosystems. *Brazilian Journal of Biology*, vol. 27, no. 3, 2012.
- <sup>25</sup> *Orbygnia martiana*.
- <sup>26</sup> *Caryocar brasiliense*.
- <sup>27</sup> *Dipteryx pterata*.



