

CLIMATE INVESTMENT FUNDS

FIP/SC.8/4/Rev.1
April 23, 2012

Meeting of the FIP Sub-Committee
Washington, DC
May 4, 2012

Agenda Item 5

INVESTMENT PLAN FOR BRAZIL

Proposed Decision by the FIP Sub-Committee

The Sub-Committee reviewed document FIP/SC.8/4/Rev.1, *Investment Plan for Brazil*, and

- a) endorses the Investment Plan as a basis for the further development of the projects foreseen in the plan and takes note of the total requested funding of USD 70 million (USD 37.52 million in grant funding and USD 32.48 million in loan financing);
- b) reconfirms its decision on the allocation of resources, adopted at its meeting in November 2010, that a range of funding for the country should be used as a planning tool in the further development of project and program proposals to be submitted to the FIP Sub-Committee for FIP funding approval, recognizing that the minimum amount of the range is more likely and that the upper limit of the range will depend on availability of funding;

The range of funding agreed for Brazil is USD\$ 50-70 million in FIP resources. The Sub-Committee also recognizes that the quality of the proposed activities will be a significant factor in the funding to be approved by the Sub-Committee when project and program proposals are submitted for approval of FIP funding;

- c) approves a total of USD \$300,00 in FIP funding as preparation grants for the following projects,
 - i. USD 100,000 for the project “*Sustainable Production in Areas Previously Converted to Agricultural Use*”, (IBRD);
 - ii. USD 100,000 for the project “*Forest Information to Support Public and Private Sectors in Managing Initiatives Focused on Conservation and Valorization of Forest Resources*”, (IDB); and
 - iii. USD 100,000 for the project “*Implementation of an Early Warning System for Preventing Forest Fires and a System for Monitoring the Vegetation Cover*”, (IBRD).

to be developed under the investment plan.

- d) takes note of the estimated budget for project preparation and supervision services for the projects referenced above and approves a first tranche of funding for MDB preparation and supervision services as follows:
 - i. USD 265,000 for the project “*Environmental Regulation of Rural Lands*”, (IBRD);
 - ii. USD 265,000 for the project “*Sustainable Production in Areas Previously Converted to Agricultural Use*”, (IBRD);
 - iii. USD 250,000 for the project “*Forest Information to Support Public and Private Sectors in Managing Initiatives Focused on Conservation and Valorization of Forest Resources*”, (IDB); and

- iv. USD 240,000 for the project “*Implementation of an Early Warning System for Preventing Forest Fires and a System for Monitoring the Vegetation Cover*”, (IBRD).
- e) requests the Government of Brazil and the MDBs to take into account all written comments submitted by Sub-Committee members by May 18, 2012 in the further development of the projects.

Climate Investment Funds
Forest Investment Program

BRAZIL INVESTMENT PLAN

Version No.3

(04/11/2012)

This document is an update of the original Portuguese version of the first draft “*Plano de Investimento do Brasil – Versão 1,*” dated 01/25/12. It has been adjusted after consideration of observations and recommendations raised during the consultation process, the FIP Joint Mission and the Technical Quality Review.

Brasilia, Brazil
April, 2012

FOREST INVESTMENT PROGRAM (FIP) Summary of the Brazil Investment Plan		
1. Country/Region:	Brazil/Latin America	
2. Financing request from FIP (in USD millions):	Grant: USD 37.52 million	Loan: USD 32.48 million
3. FIP National Focal Coordinator:	Secretariat for International Affairs, Ministry of Finance (SAIN/MF)	
4. National Implementation Agency (Investment Plan Coordinator):	Ministry of the Environment (MMA)	
5. MDBs involved	International Bank for Reconstruction and Development (IBRD) Inter-American Development Bank (IDB) International Finance Corporation (IFC)	
6. MDB, FIP Focal Point and Team Leader (TTL):	<p><i>HQ FIP Focal Point:</i></p> <p><i>International Bank for Reconstruction and Development</i> Gerhard Dieterle, Forests Adviser and FIP Focal Point gdieterle@worldbank.org</p> <p><i>Inter-American Development Bank</i> Gloria Visconti, Senior Specialist on Climate Change gloriav@iadb.org</p> <p><i>International Finance Corporation</i> Frederico Benite, Principal Business Development Officer fbenite@ifc.org</p>	<p><i>Team Leader (TTL):</i></p> <p><i>International Bank for Reconstruction and Development</i> Garo Batmanian, Senior Environment Specialist gbatmanian@worldbank.org</p> <p>Bernadete Lange, Environment Specialist blange@worldbank.org</p> <p><i>Inter-American Development Bank</i> Simone Bauch, Climate Change Specialist sbauch@iadb.org</p> <p>Laura Gaensly, Climate Change Specialist lgaensly@iadb.org</p> <p><i>International Finance Corporation</i> Lisa da Silva, Principal Official for Climate Change Investment and Technical Assistance, Latin America and the Caribbean. lsilva@ifc.org</p>

7. Description of the Investment Plan

The **Brazil Investment Plan** (IP) will seek to promote sustainable land use and forest management improvement in the Cerrado, the second largest biome in Brazil and South America, contributing to reducing pressure on the remaining forests, reducing GHG emissions and increasing CO₂ sequestration.

The Cerrado is a strategic biome both for economic and environmental reasons and also for food security. It covers a large area with significant carbon stocks, water resources and substantial biodiversity.

The Center-West region (mainly Cerrado) has the largest portion of the land area occupied by rural properties (32% of the total) in Brazil and also has the highest average area per property of all farms in the country (397.2 ha). The Cerrado region now has a unique opportunity to develop new paradigms that combine modern and sustainable agriculture with the conservation of natural resources and the promotion of human well-being.

The programs and plans that have been implemented by the Government of Brazil (GoB) in the Amazon have succeeded in drastically reducing deforestation from 27.7 thousand km² in 2004 to only 6.2 thousand km² in 2011. While the Amazon biome still maintains around 80% of its original cover, approximately 48% of the Cerrado has been converted over the past 50 years. In 2002-2008 the average deforestation rate in the Cerrado was 14,200 km²/year. The GoB is aware of this challenge and is replicating in the Cerrado the programs and plans already implemented in the Amazon, adapting them as necessary to the environmental and socioeconomic conditions of the region.

The Brazil Investment Plan comprises coordinated actions by three Ministries (Environment, Science, Technology & Innovation, and Agriculture and Livestock and Food Supply) focused on building synergies in order to maximize the impact of a larger set of policies aimed at reducing deforestation in the Cerrado biome through **(1) improving environmental management in areas previously anthropized** and **(2) producing and disseminating environmental information at the biome scale**. Therefore, it is essential to take these actions forward in a joint effort to avoid the conversion processes that could occur if the command and control actions are not accompanied by incentives in order to promote sustainable productive activities.

It is important to highlight that, since the beginning of the design phase, the successful collaboration between the three Ministries has allowed the development of a strategic approach capable to foster synergies not only among Brazil Investment plan and its projects, but also with ongoing Cerrado government plans and policies already in implementation at federal, state and municipal levels.

a) Key challenges regarding the implementation of REDD+ equivalent program

It is vital to ensure the continuity of the significant progress made by the GoB in mobilizing its capacities in various sectors of the federal, state, and municipal governments, as well as developing partnerships and working with the private sector, civil society and traditional communities, to reduce deforestation and forest degradation and improve land use. The continental size and environmental complexity of Brazil and the need for, *inter alia*, ensuring the consistency of the various instruments employed, coordinating efforts in the regions and sharing timely and relevant information are all challenges which call for the building of synergies between the various actors and activities with a view to securing cost-effective solutions. Each of the projects in the Brazil Investment Plan will contribute to this coordinating effort by funding investments and activities designed to support actions of the various executors and their working relationships with other government entities involved. In addition to addressing the different aspects of interagency coordination, the Plan will also contribute to resolving operational, regulatory and management challenges.

Nature conservation, respect for traditional communities and the reduction of GHG emissions arising from land use changes in the Cerrado are challenges related to improving the use and management of

land and natural resources in landholdings, including through the use of regular and consistent environmental information. The agricultural boom in the Cerrado, which has contributed to making Brazil a global leader in food production, is based on a model of mechanized production and the intensive use of agricultural inputs. The challenge now is to ensure that agriculture, especially in the Cerrado, can continue to develop while responding to incentives to adopt more sustainable practices that can maintain or increase productivity and profitability while preserving natural resources and reducing GHG emissions. This Investment Plan therefore seeks to contribute to the Government of Brazil's efforts to meet this challenge and improve the use and management of land and natural resources on private lands.

It is important to note that Brazil has a consistent public land management policy, which includes designating legally-protected areas for the use of indigenous or traditional communities and for nature conservation and sustainable production. Brazil's public forest lands under protection, including the Indigenous Lands, account for around 200 million ha, with very low rates of deforestation or degradation. In the specific case of the Cerrado biome, Protected Areas represent 8.2% of the area, while Indigenous Lands occupy 4.4% of the biome.

Given the amount of resources available under the FIP, the need to undertake additional and transformational actions, and ongoing support from other sources, the Protected Areas and Indigenous Lands will not be the main focus of this Brazil Investment Plan. The indigenous peoples and traditional communities will nevertheless benefit from the various elements of the Plan, in terms of access to information about the respective lands, fire alerts, and support for environmental compliance and assistance with the adoption of good practices of low-carbon farming, in and around their lands.

b) Intervention Areas – sectors and issues

The **Brazil Investment Plan** strategy mainly targets the following FIP investment areas: *Investments outside the forest sector necessary to reduce the pressure on forests*; and *Institutional capacity, forest management and information*. As a complementary measure, the Plan also focuses on the third FIP investment area by supporting *mitigation actions related to forests*, such as encouraging forest recovery of Legal Reserves (RLs) and Permanent Preservation Areas (APPs) in landholdings. The Investment Plan covers two thematic areas and four projects, as listed below:

Theme 1 – Management and Use of previously anthropized areas

- 1.1- Environmental regularization of rural lands (based upon the CAR¹);
- 1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan²).

Theme 2 – Production and Management of Forest Information

- 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources;
- 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover.

c) Expected results from implementation of the Brazil Investment Plan

The Brazil Investment Plan has developed a management arrangement capable of assuring that the synergies between the different institutions will not be lost during the implementation phase. Furthermore a monitoring and evaluation plan will be developed to measure the achievement of the expected results.

¹ Rural Environmental Cadastre (CAR).

² Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture (ABC Plan).

The following table summarizes the main expected results from implementation of the Investment Plan and lists the success indicators.

8. Expected results from implementation of the Investment Plan (consistent with the FIP results framework)³:

Result	Success Indicator
<ul style="list-style-type: none"> • Sustainable management adopted in previously converted areas 	<ul style="list-style-type: none"> • Changes in the acreage of deforested area in RL and APP registered in the CAR in the Cerrado; • Changes in the acreage of the degraded areas in RL and APP registered in the CAR in the Cerrado; • Identification of investments outside the forest sector for addressing the drivers of deforestation and forest degradation in the Cerrado; • ha of restored pasture land; • ha of Crop-Livestock-Forest integration; • ha of no-tillage system; • ha of biological nitrogen fixation; • ha of planted forests.
<ul style="list-style-type: none"> • Environmental information produced and disseminated and forests and forest landscapes managed in a sustainable way in order to address the drivers of deforestation and forest degradation. 	<ul style="list-style-type: none"> • Forest inventory results of the Cerrado publicly available • National Forest Information System (NFIS) accessible to everyone, providing information on different topics related to forest resources and forest management; • Official annual reports on vegetation cover and land use in the Cerrado publicly available; • Official annual reports on the extent of burned areas publicly available; • Number of state and municipal entities trained and organized to receive forest fire alerts; • Integration of natural forest conservation into the land use planning process; • Identification of legislation linked to the CAR and its instruments for detecting and processing violations; • Official annual reports on size of APPs and RLs publicly available.
<ul style="list-style-type: none"> • Capacity for tackling the immediate and underlying causes of deforestation and increased degradation. 	<ul style="list-style-type: none"> • Number of technical assistance providers, producers and financial agents trained in good forestry, agricultural and livestock-raising practices.
<ul style="list-style-type: none"> • New and additional resources for forests and projects related to forests 	<ul style="list-style-type: none"> • Leveraging funding from other international sources (bilateral and multilateral).
<ul style="list-style-type: none"> • Incorporation of learning through the development of stakeholders thoroughly familiar with REDD+ 	<ul style="list-style-type: none"> • Number of different types of knowledge-disseminating instruments created and shared.

³ The Government of Brazil will not set a target for the reduction in emissions of tCO₂ equivalent in the Investment Plan. It will, however, estimate the potential reduction of emissions in tCO₂ equivalent related to the indicators presented in this IP, by using the methodology employed by Brazil in its periodic National Communication to the UN Framework Convention on Climate Change.

9. Project and program concepts in the context of the Investment Plan (USD millions)					
Project Title	MDB	Requested FIP amount		Expected co-financing	TOTAL
		Grants	Loan		
1.1- Environmental regularization of rural lands (based upon the CAR).	IBRD	1.00	32.48	17.50	50.98
1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan).	IBRD in collaboration with IFC	10.72*	0	25.00	35.72
2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources.	IBD	16.55*	0	8.00	24.55
2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover.	IBRD	9.25*	0	6.50	15.75
TOTAL		37.52	32.48	57.00	127.00
* Includes USD100,000 for preparation grant					
10. Timeframe (tentative) – Approval Milestones					
			FIP Sub-Committee Approval	MDB Board Approval	
1.1- Environmental regularization of rural lands (based upon the CAR).				September 2012	
1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan).				November 2012	
2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources.			August 2012	September 2012	
2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover.				August 2012	
11. Link with FCPF and UN-REDD Program activities					
Brazil does not participate in the FCPF and is not a member of the UN-REDD program. Nonetheless, the actions proposed under the Investment Plan are a sub-set of the Brazil's National Climate Change Plan and are consistent with activities being considered under those two international initiatives, as it will be further detailed in this document.					
12. Other partners involved in design and implementation of the Investment Plan:					
Ministry of Finance (MF); Ministry of the Environment (MMA); Brazilian Forest Service (SFB); Ministry of Agriculture, Livestock and Food Supply (MAPA); Brazilian Agricultural Research Corporation (Embrapa); Ministry of Science, Technology and Innovation (MCTI) and its research institutes; State science and technology bodies; National Indigenous Foundation (FUNAI); State environmental agencies; State agriculture and livestock agencies; commercial banks; rural producer cooperatives and associations; NGOs; bilateral partners.					

13. Consultations with indigenous peoples and traditional communities

The preparation of the Brazil Investment Plan for the FIP included involving and consulting stakeholders.

Arrangements for involvement and consultation process were coordinated MMA, with participation of MAPA, MCTI, MF, FUNAI and SFB, and support of the Brazilian Biodiversity Fund – FUNBIO, through the IP preparation grant.

In addition to a number of informational sessions held since the Scoping Mission (May 2011), the plan included direct and online (via the internet) consultations, the details of which are set out in **Annex 2**. This process involved public and private sector representatives interested in the main themes addressed in the IP and who are active in the geographical area targeted by the intervention. Thus, representatives of the private sector, academia, NGOs, social movements and State environmental agencies, as well as indigenous peoples and traditional communities were consulted. This process might also provide inputs for defining how the Dedicated Grant Mechanism for Indigenous Peoples and Traditional Communities can make a complementary contribution to FIP goals in Brazil (**Annex 3**).

The arrangements consisted of the following:

- i. **Information sharing session** with stakeholders **during the Scoping Mission** (May 2011);
- ii. **Information workshops** on the FIP, also covering the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities (November and December 2011);
- iii. **Public consultation through the Internet** on the Brazil Investment Plan between 25th January and 5th March 2012, using the websites of the governmental institutions involved;
- iv. **Participatory consultation workshop** (7th February 2012)
- v. **Sessions with stakeholders during the Joint Mission** (15th February 2012).
 - a. **Information sharing session with indigenous peoples and traditional communities** (15th February 2012 – morning), and
 - b. **Discussion session on results from the Participatory consultation workshop** (15th February 2012 – afternoon);
- vi. **Meetings with stakeholders** (March 2012), including high-level dialogue with the **Forum of State Environment Secretaries in the Cerrado Biome**;

Interested parties involvement will continue during the design stage of the specific projects according to the procedures laid down for project preparation adopted by the respective MDBs.

14. Private sector participation

Private sector will play an important role in the implementation of the IP. The activities proposed in the Investment Plan are intended to support a broader set of policies and instruments, especially the CAR (Rural Environmental Cadastre) and the ABC Plan (Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture), which will contribute to enabling the environment for developing and leveraging private investments aimed at easing pressure on forests and reducing GHG emissions. Landholders will, for example, be incentivized to maintain forest cover on their farms in compliance with environmental regulations (which may involve restoring degraded areas) and for adopting more suitable land use technologies. This is expected to contribute to GHG emission reductions and to an increase in carbon sequestration in the biomass and soil, as well as helping to lessen deforestation pressures on the remaining forests. Investors and managers of private enterprises will be able to use the information regarding the availability and location of forest resources in order to plan activities. They will also benefit from the value appreciation of the forest and the natural resources linked to it. Moreover, the private sector will provide business development and technical assistance services, supply inputs for agricultural and forestry production, and provide services for financing the adoption of sustainable technologies and the recovery of Areas of Permanent Preservation (APPs) and Legal Reserves (RLs). The IP activities intend to contribute to enabling private sector stakeholders, who will be better trained and informed, to access the credit available from the ABC Plan.

15. Other relevant information:

The official information generated and publicly disseminated as the result of systematic surveys of the vegetation coverage through a standardized forest inventory and remote sensing monitoring will be key instruments for managing Indigenous Lands and lands of traditional communities engaged in extractive activities. In addition, the early-warning system for preventing forest fires is an essential tool for reducing this significant driver of forest degradation. The implementation, at the biome scale, of the Rural Environmental Cadastre (CAR) will also make it possible for the mechanism to be applied without cost to smallholders, thereby facilitating their compliance with environmental legislation. It will also help them to access financial resources under the Program for the Sustainable Development of the Family Production Unit (PRONAF *Sustentável*) and the Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture (ABC Plan), which will prioritize investments in surrounding areas to Indigenous Lands and lands of traditional communities. Finally, the ABC Plan will provide support, when necessary, for the restoration of existing APPs and RLs on landholdings.

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INTRODUCTION

The Strategic Climate Fund (SCF) was created to provide financing for new ways of developing or up-scaling activities which seek to respond to a specific challenge related to climate change or to provide a sectoral response through directed programs. The Forest Investment Program was created as one of these directed initiatives in order to catalyze policies and measures and to mobilize funds to facilitate the reduction of deforestation and forest degradation, with a view to promoting more sustainable forest management, thus leading to reduced emissions and enhanced conservation of forest carbon stocks.

The main purpose of the FIP is to support developing countries' REDD+ efforts by: providing up-front bridging financing for readiness reforms and public and private investments identified through national REDD readiness strategy building efforts; identifying opportunities to help them adapt to the impact of climate change on forests; and contributing to a range of beneficial activities such as biodiversity conservation, protection of the rights of indigenous peoples and local communities³, poverty reduction and improvement of rural livelihoods. The FIP will finance efforts to address the underlying causes of deforestation and forest degradation and to overcome barriers that have hindered past efforts to do so.

The FIP will be designed to achieve four specific objectives:

- a) To initiate and facilitate progress towards transformational change in developing countries' forest-related policies and practices, through:
 - i. serving as a vehicle to finance investments and the related capacity building necessary to implement policies and measures that emerge from inclusive multi-stakeholder REDD planning processes at the national level;
 - ii. strengthening cross-sector ownership to scale up implementation of REDD strategies at the national and local levels;
 - iii. addressing key direct and underlying drivers of deforestation and forest degradation;
 - iv. supporting change with the nature and scope necessary to help to bring about a shift in direction in national forest and land use development;
 - v. linking the sustainable management of forests and low carbon development;
 - vi. facilitating scaled-up private investment in alternative livelihoods for forest dependent communities that over time generate their own value;
 - vii. reinforcing existing efforts in the conservation and sustainable use of forests; and
 - viii. improving forest law enforcement and governance, including forest laws and policy, land tenure administration, monitoring and verification capability, and transparency and accountability.
- b) To pilot replicable models to generate understanding and learning of the links between the implementation of forest-related investments, policies and measures and long-term emission reduction and conservation, sustainable management of forests and the enhancement of forest carbon stocks in developing countries. By committing to apply a priori and ex post impact assessment of programs and projects, the FIP will ensure that the outcomes and effectiveness of FIP-supported interventions in reducing deforestation and forest degradation can be measured;
- c) To facilitate the leveraging of additional financial resources for REDD, leading to an effective and sustained reduction of deforestation and forest degradation, thereby enhancing the sustainable management of forests.

In its efforts to achieve these objectives, the FIP will support and promote, *inter alia*, investments in the following areas:

- a) **Institutional capacity, forest governance and information** such as: implementation of systems for forest monitoring, information management and inventory; support for legal, financial and institutional development including forest law enforcement, cadastral mapping and land tenure reform; removal of perverse incentives favoring deforestation and degradation; cross-sector and landscape based planning exercises; transfer of environmentally sound technology; and building capacities of indigenous peoples and local communities;
- b) **Investments in forest mitigation measures, including forest ecosystem services** such as: forest conservation; promotion of payments for environmental services and other equitable benefit-sharing arrangements; restoration and sustainable management of degraded forests and landscapes; afforestation and reforestation of previously deforested land; restructuring forest industries and promoting company-community partnerships; forest protection measures; improved land management practices; and promotion of forest and chain of custody certification;
- c) **Investments outside the forest sector necessary to reduce the pressure on forests** such as: alternative livelihood and poverty reduction opportunities; alternative energy programs; agricultural investment in the context of rationalized land-use planning; and agricultural intensification including agro-forestry.

The FIP Sub-Committee created a Group of Experts charged with formulating recommendations for the selection of national or regional pilot programs to meet the criteria and other considerations agreed by the Sub-Committee. Brazil was chosen as one of the 8 pilot countries invited to participate in this task. Brazil accepted the invitation, which allowed it to initiate the preparation of its Forest Investment Plan through a scoping mission in Brasilia between the 23rd and 26th of May 2011.

The present document is a revised version of the first draft of the Brazil Investment Plan, dated 01/25/2012. It takes into consideration the observations and recommendations from civil society by means of a consultation process coordinated by the Government of Brazil (**Annex 2**) and from the Joint Mission held from 13th to 17th February 2012, as well as the comments and recommendations of the FIP external reviewers.

The Investment Plan will be submitted to the FIP Sub-Committee for its consideration and eventual approval. Once the IP is approved and after completing internal procedures, specific projects will be prepared. Each project will be processed in accordance with the specific preparation and approval procedures of the respective Multilateral Development Banks (MDBs). Finally, the projects will be resubmitted to the Sub-Committee for a final decision on financing. Thus the Forest Investment Plan represents an important first step in the implementation of the FIP in Brazil.

ABBREVIATIONS AND ACRONYMS

ABC Plan	Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture
ABEMA	Brazilian Association of State Environmental Entities
APA	Environmental Protection Areas
APIB	Articulation of Indigenous Peoples in Brazil
APP	Area of Permanent Preservation
ARPA	Amazon Protected Areas
BID	Inter-American Development Bank
BIRD	The World Bank
MDB	Multilateral Development Bank
BNB	North-East Bank of Brazil
BNDES	Brazilian Development Bank
CAR	Rural Environmental Cadastre
CDB	Convention on Biological Diversity
CEMADEN	National Center of Natural Disaster Monitoring and Warning
CENAD	National Center for Disaster and Risk Management
CGEC	General Coordination for Management of Ecosystems and Biodiversity – MCTI
CGFLOP	Public Forest Management Commission
CGMC	General Coordination for Global Climate Change – MCTI
CI	Conservation International
CIF	Climate Investment Funds
CNFP	National Cadastre of Public Forests
CNPCT	National Commission for Traditional Peoples and Communities
CNPI	National Commission for Indigenous Policy
CONACER	National Commission for the Sustainable Cerrado Program
CONAFLOP	National Forest Commission
CONAMA	National Environmental Council
COP	Conference of the Parties
CSO	Civil Society Organizations
CT&I	Science, Technology and Innovation
DAP	Protected Areas Department – SBF
DCBio	Biodiversity Conservation Department – SBF
DEFRA	Department of Environment, Food and Rural Affairs (Government of the United Kingdom)
DENACOOOP	Cooperatives and Associations Department – SDC
DEPROS	Production Systems and Sustainability Department – SDC
DETER	System of Deforestation Detection in Real Time
DETEX	Project for Mapping Selective Logging Exploitation
DfID	Department for International Development (Government of the United Kingdom)
Dflor	Forestry Department – SBF
DPG	Genetic Heritage Department – SBF
EIA	Environmental Impact Study
Embrapa	Brazilian Agricultural Research Corporation
Embrapa - Florestas	Embrapa unit dedicated to Forest-related research
FAO	United Nations Food and Agriculture Organization
FBMC	Brazilian Forum on Climate Change
FBN	Biological Nitrogen Fixation
FCO	Center-West Constitutional Fund
FCPF	Forest Carbon Partnership Facility
FINEP	Studies and Projects Financing Public Company
FIP	Forest Investment Program

FLONAs	National Forests
FNDCT	National Fund for Scientific and Technological Development
FNDF	National Fund for Forest Development
FNE	Constitutional Fund for the Northeast
FNMA	National Environment Fund – MMA
FNMC	National Fund on Climate Change
FNO	Constitutional Fund for the North
FUNAI	National Indigenous Foundation
FUNBIO	Brazilian Biodiversity Fund
GEF	Global Environment Facility
GEx	Executive Group on Climate Change
GHG	Greenhouse Gases
GoB	Government of Brazil
GOES	Geostationary Operational Environmental Satellite
GTA	Amazonian Working Group
IBAMA	Brazilian Institute for Environment and Renewable Natural Resources
IBGE	Brazilian Institute for Geography and Statistics
ICMBio	Chico Mendes Institute for Biodiversity Conservation – MMA
IFC	International Finance Corporation
IL	Indigenous Land
IMAZON	Amazon Institute for Man and the Environment
INCRA	National Institute for Colonization and Agrarian Reform
INPE	National Institute for Space Research
IPCC	Intergovernmental Panel on Climate Change
IP	Investment Plan
IPTC	Indigenous Peoples and Traditional Communities
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
LOA	Annual Budget Law
LUCF	Land Use Change and Forestry.
MAPA	Ministry of Agriculture, Livestock and Food Supply
MBRE	Brazilian Emissions Reduction Market
MCTI	Ministry of Science, Technology and Innovation)
MDA	Ministry of Agrarian Development
MDIC	Ministry of Development, Industry and Commerce
MDL	Clean Development Mechanism
MF	Ministry of Finance
MFS	Sustainable Forest Management
MMA	Ministry of the Environment
MRV	Monitoring, Reporting and Verification
NAMAs	Nationally Appropriate Mitigation Actions
NFI	National Forest Inventory
NFIS	National Forest Information System
NOR	Cooperation initiative on MRV with Norway and channeled through FAO/UNDP
NTFP	Non-timber Forest Products
OEMAs	State Environmental Organizations
ONGs	Non Governmental Organizations
PAA	Food Procurement Program
PCTAFs	Traditional Peoples and Communities and Family Farmers)
PDA	Amazon Development Plan
PDPI	Amazonian Indigenous Peoples Demonstration Project
PGPM	Minimum Price Guarantee Policy
PGPM-Bio	Minimum Price Guarantee Policy for Biodiversity Products
PIB	Gross Domestic Product
PIF	Project Identification Form – GEF
PMCF	Federal Program for Community and Family Forest Management

PMFS	Sustainable Forest Management Plan
PNAE	National School Meals Program
PNAP	National Strategic Plan for Protected Areas
PNGATI	National Policy for Territorial and Environmental Management of Indigenous Lands
PNF	National Forest Program
PNMC	National Policy and/or Plan for Climate Change
PNPCT	National Policy for Sustainable Development of Traditional Peoples and Communities
PNPSB	National Plan for Promoting Socio-Biodiversity Products
PPA	Multi-Year Plan
PPCDAm	Action Plan for the Prevention and Control of Deforestation in the Legal Amazon
PPCerrado	Action Plan for the Prevention and Control of Deforestation and Fires in the Cerrado
PPG7	Pilot Program for the Protection of Brazilian Tropical Forests
PPTAL	Integrated Project for the Protection of Indigenous Peoples and Lands in Legal the Amazon
PR	Presidency of the Republic
PREVFOGO	National System of Forest Fire Prevention and Control
PROARCO	Program for the Prevention and Control of Burning and Forest Fires in the Legal Amazon
PROBIO	Project for the Conservation and Sustainable Use of Biodiversity, within the PRONABIO (GoB/GEF)
PRODES	Project for Gross Deforestation Estimation in the Brazilian Legal Amazon
<i>Programa Cerrado Sustentável</i>	National Program for Conservation and Sustainable Use of the Cerrado Biome
<i>Programa Mais Ambiente</i>	Federal Program to Support Environmental Regularization of Rural Properties
Promanejo	Forest Management Project in the Amazon
PRONABIO	National Program of Biological Diversity
PRONAF	National Program to Strengthen Family Agriculture
PRONAF <i>Sustentável</i>	Program for the Sustainable Development of the Family Production Unit
ProVárzea	Program to Support Natural Resource Management of Whitewater Flooded Forest
PSA	Payment for Environmental Services
RDS	Regional Sustainable Development Strategy
REBIO	Biological Reserves
REDD	Reducing emissions from deforestation and forest degradation
REDD+	Reducing emissions from deforestation and forest degradation; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
Rede Clima	Brazilian Research Network on Global Climate Change
RESEX	Extractive Reserves
RL	Legal Reserve
RPPN	Private Reserves of Natural Heritage
SAE-PR	Secretariat for Strategic Affairs of the Presidency of the Republic
SBF	Secretariat for Biodiversity and Forests – MMA
SBPC	Brazilian Society for the Progress of Science
SCF	Strategic Climate Fund
SDC	Secretariat for Agricultural and Cooperative Development – MAPA
SEDR	Secretariat for Extractivism and Sustainable Rural Development – MMA
SEPED	Secretariat for Research and Development of Policies and Programs – MCTI
SFB	Brazilian Forest Service
SIBBr	Brazilian Biodiversity Information System

SIG	Geographic Information System
SINIMA	National System for Environmental Information
SISCOM	Information Sharing System of Environmental Licensing in Rural Properties in the Amazon
SisFogo	National System for Fire Information
SISNAMA	National Environmental System
SMCQ	Secretariat for Climate Change and Environmental Quality – MMA
SNPA	National Agricultural Research System
SNUC	National Protected Areas System
SPRN	Natural Resources Policy Sub-Program
TBD	To Be Determined
TNC	The Nature Conservancy
TTL	Task Team Leader
PAs	Protected Areas
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WWF	World Wildlife Fund for Nature
ZEE	Economic and Ecological Zoning

UNITS OF MEASUREMENT

BRL	Brazilian Real
CH ₄	Methane
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
EUR	Euros (European Union currency unit)
GBP	Great Britain Pound
Gg	Gigagrams equivalent to thousands of tons
ha	Hectare
km ²	Square kilometer
M ³	Cubic meter
Mt	Megaton
N ₂ O	Nitrous oxide
NKR	Norwegian Crown
tCO ₂	Ton of carbon dioxide
Tg	Teragram, equivalent to Million of tons (Mt)
USD	United States Dollar

1. DESCRIPTION OF THE COUNTRY AND SECTOR CONTEXT

1. Brazil is the largest country in Latin America and the fifth largest in the world, with an area of 851.5 million ha. The country occupies 1.6% of the earth's surface, 5.7% of planet's dry land and 20.8% of the land area of the American continent.
2. The Federative Republic of Brazil is divided into 26 states and the Federal District, with 5,565 municipalities. The country has a democratic presidential system based on the 1988 Federal Constitution.
3. Brazil is a developing country with a complex and dynamic economy. In 2010 it was the seventh largest economy in the world in GDP terms (USD 2.1 trillion), but only number 44 in terms of GDP per capita (USD 10,700). Between 2000 and 2010 the average annual economic growth rate was 3.7%. Over the same period the country's population grew by 12.3%, making it the world's fifth largest population with 191 million inhabitants, of which 84.35% live in urban areas.
4. Brazil is an urban-industrial country with an economy partly anchored in the export of primary products, including agricultural commodities. The country is ranked first as an exporter of various agricultural products: sugarcane, beef, poultry, coffee, tobacco and ethanol. Brazil is also the second largest exporter of soybeans and corn and the world's fourth largest exporter of pork. Between 2003 and 2009, the value of agribusiness exports increased by 111.4%, from USD 30.6 billion to USD 64.7 billion. It is worthwhile to notice that soybeans and its derivatives are together the most important export produce and its production is largely based in the Cerrado Biome. The country exports around 1,500 different agricultural products to over 200 markets in Europe, Asia, Africa, the Americas and the Middle East.
5. A combination of economic growth and government-inspired programs has already taken 28 million people out of poverty since 2003, although some 16 million Brazilians are still regarded as very poor. Regional disparities remain. National priorities are therefore focused on meeting urgent social and economic needs such as poverty eradication, the reduction of socio-economic inequality, improved healthcare, combating hunger, guaranteeing decent housing etc.

The Brazilian Forests and Greenhouse Gases (GHG)¹

6. Brazil's territory contains six continental biomes: Amazon, Cerrado, Pantanal, Atlantic Forest, Caatinga and Pampa, as shown in Figure 1. The original cover of the three forest biomes represents 80% of Brazil's territory, with the Amazon covering around half of the country's total territory and the Cerrado² occupying almost one quarter. The Atlantic Forest accounts for around 13%.

7. Brazil's forests constitute 12% of the world's forest area, a quarter of the area covered by tropical forests and 35% of the world's tropical rainforests. The forests are responsible for a significant part of global land-based biodiversity. Brazil also has approximately 7 million ha of planted forest.

8. The remaining forests occupy 460 million ha (54% of the national territory). It is estimated that 82% of the original Amazon biome cover remains, while around 52% remains in the Cerrado and 14% in the Atlantic Forest. The smaller forest remnants are partly prone to processes that induce fires and

Figure 1 – Map of Brazilian biomes



Source: IBGE

¹ Adapted from MCTI, 2010a. *2nd Brazilian National Communication to the UN Framework Convention on Climate Change*. MCTI – General Coordination on Global Climate Change (CGMC), Brasilia.

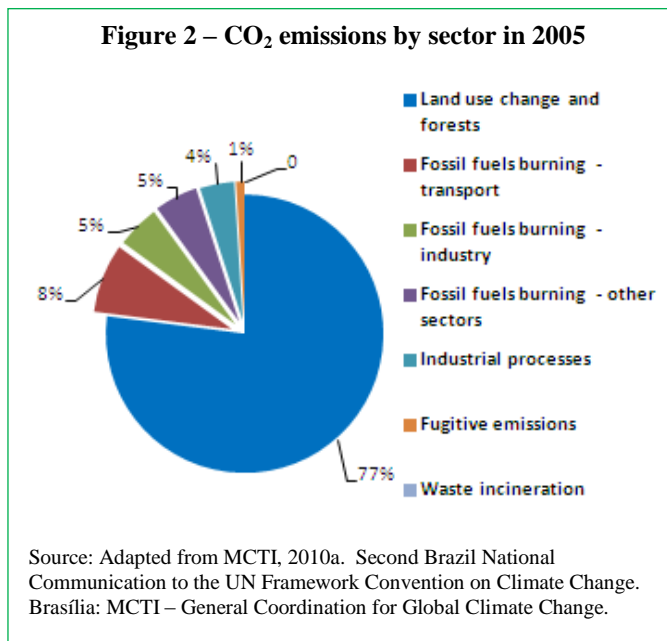
² Partially covers the states of Bahia, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Piauí, São Paulo and Tocantins, and totally the Distrito Federal

forest degradation.

9. Brazil is identified as a megadiverse country with an extremely rich flora and fauna. Forty thousand different species of flora are already cataloged. Brazilian fauna is equally rich, although knowledge about all the species is still incomplete (it is estimated that less than 10% of the existing total is known).

10. Brazil recognizes the importance of forests and forest activities to the mitigation efforts by developing countries. These efforts call for support from developed countries in the form of new and additional financial and technical resources. It should be emphasized however that, in accordance with the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)³, the component Land Use Change and Forestry (LUCF) contributes to the increase of atmospheric CO₂ levels, which is certainly significant but lower in relation to the contribution of fossil fuels, which is the primary factor for these increases.

11. Through the climate perspective, Brazil's forests are important due to the substantial carbon stored in biomass and soils. The most recent national inventory of greenhouse gas emissions, taking the year 2005 as a baseline, showed that Land Use Change and Forestry (LUCF) was responsible for 77% of CO₂ emissions in Brazil. This contribution to GHG is however tending to decline in line with the reduction of deforestation in the Amazon.



12. Given the substantial role played by renewable energy in the Brazilian energy matrix, with the use of hydropower for producing electricity, ethanol for transportation and sugarcane bagasse and charcoal for industry, the portion of CO₂ emissions represented by the use of fossil fuels in Brazil is relatively small. **Figure 2** shows the relative emissions by sector in 2005 according to the Brazil's Second National Communication to the UN Framework Convention on Climate Change.

13. The contribution of each biome to CO₂ emissions depends on the carbon stocks in the biomass and soil, and on deforestation and forest degradation rates. According to these estimates the largest part of the biomass in the Cerrado biome is below ground.

14. **Table 1** shows the net annual anthropic emissions of CO₂ for the period 1990 to 2005 for each of the Brazilian biomes. Land use change in Cerrado contributed with 22% of net anthropic emissions in 2005. It is estimated that the relative contribution of the Cerrado has increased since then, given that since 2005 deforestation levels in the Amazon have fallen more steeply than in the Cerrado.

15. Methane emissions (CH₄) are caused by a number of different activities including the conversion of forests to other uses, farming, burning fossil fuels and biomass, garbage dumps, sewage treatment, oil and natural gas production and processing systems, charcoal production and certain industrial processes. Figure 3 shows how net CH₄ emissions were distributed in Brazil, by sector, in 2005.

³ IPCC, 2007: *Summary for Policymakers*. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, p.2.

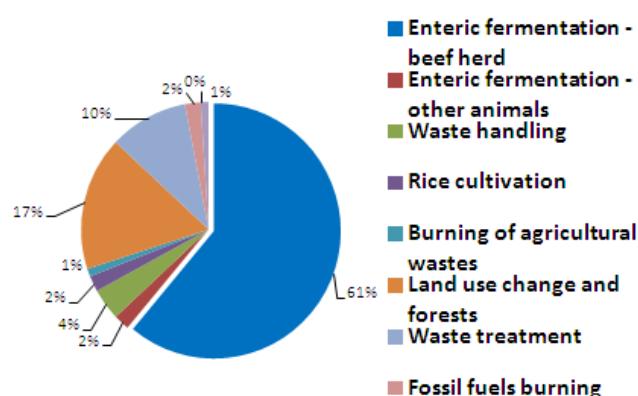
Table 1 – Net annual anthropic emissions of CO₂ by biome (1990-2005)

Biomes	1990	1994	2000	2005	Share 2005	Variation 1990-2005
	(Tg)				(%)	
Amazon	460.53	521.05	814.11	842.97	67.4	83.0
Cerrado	233.00	233.00	302.71	275.38	22.0	18.2
Atlantic Forest	22.17	22.17	79.11	79.11	6.3	256.9
Caatinga	27.97	27.97	37.63	37.63	3.0	34.6
Pantanal	17.83	17.83	16.17	16.17	1.3	-9.3
Pampa	(0.10)	(0.10)	(0.10)	(0.10)	0.0	0.0
Total	761.39	821.92	1,249.63	1,251.15	100.0	64.3

Source: MCTI, 2010a, Second Brazil National Communication to the UN Framework Convention on Climate Change. Brasília: MCTI – General Coordination for Global Climate Change.

16. In Brazil the agricultural sector bears the largest responsibility for CH₄ emissions (71% in 2005), with the main emissions arising from ruminant enteric fermentation (eructation), mainly originating from beef cattle, the second world's largest herd. In 2005, CH₄ emissions associated with enteric fermentation were estimated at 11,487 Gg, representing 90% of the total CH₄ emissions of the farming sector. The remaining emissions were caused by animal waste, irrigated rice growing and burning agricultural detritus. Increases in CH₄ gases are predominantly due to the increase in the beef herd over recent years.

Figure 3 – Net CH₄ emissions in Brazil, by sector, in 2005

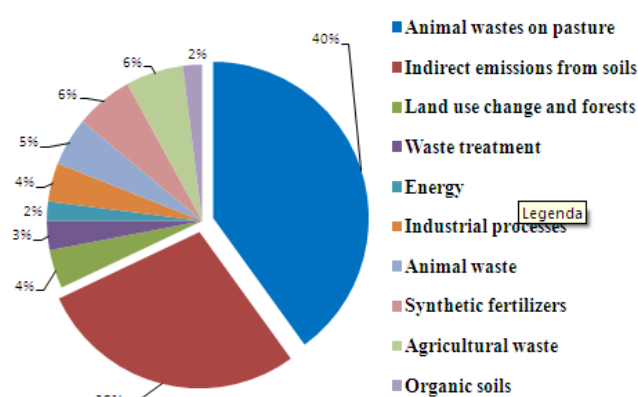


Source: MCTI 2010a, op.cit.

17. In the Land Use Change and Forestry group (LUCF), CH₄ emissions arise from burning biomass.

18. Nitrous oxide emissions (N₂O) are caused by a range of different activities including agricultural practices, industrial processes, the burning of fossil fuels and the conversion of forest to other uses. Figure 4 presents the distribution of net N₂O emissions in Brazil, by sector, in 2005.

Figure 4 – Net N₂O emissions in Brazil, by sector, in 2005



Source: MCTI, 2010a, op.cit.

19. N₂O emissions in Brazil arise predominantly in the agricultural sector either from animal waste deposited on grassland or, on a lesser scale, from the use of fertilizers on agricultural land. In the LUCF group, N₂O emissions arise from burning biomass.

Equivalent national strategy for reducing emissions from deforestation and degradation

20. The main reference points for Brazil's REDD+ type actions are the National Plan on Climate Change, launched by Brazil in December 2008, and the National Policy on Climate Change Law, enacted in December 2009 (more details on this Policy and description of other relevant instruments can be found in **Annex 4**). The National Policy on Climate Change, which includes the National Plan

as one of its instruments, defines the objectives and guidelines for domestic operations in Brazil for dealing with climate change. It enshrines in law the national voluntary commitment to reduce emissions, which could generate a reduction of between 36.1% and 38.9% on the projected emissions for 2020. The set of initiatives by Brazil involving emissions mitigation include combating deforestation and initiating alternative processes in the agricultural, energy and steel manufacturing sectors. The National Plan on Climate Change defines that Brazil's goal is to achieve an 80% reduction of deforestation in Amazon, from the 1996-2005 average (19,535 km²), and a reduction of 40% in the Cerrado, from the 1999-2008 average (15,700 km²). The National Policy also seeks to promote adaptation measures to reduce the adverse effects of climate change and the environmental, social and economic vulnerability.

21. The National Policy on Climate Change has benefited from work undertaken since 2004 under the Action Plan for Protection and Control of Deforestation in the Legal Amazon (PPCDAm) and has also provided incentives to launch a new plan focused on the Cerrado region – the Action Plan to Prevent and Control Deforestation and Fires in the Cerrado Biome (PPCerrado). These plans, targeted at specific biomes, are instruments in the National Policy on Climate Change. They also form part of the set of national strategies for biodiversity conservation based on designing policies and actions and setting goals to prevent and reduce deforestation and promote the sustainable use of natural resources in specific biomes. The PPCDAm, launched in March 2004, aims to promote the reduction of deforestation in the Amazon by focusing on land and territorial planning, monitoring, control and sustainable production activities. The PPCDAm is updated periodically to reflect changes in the dynamics of deforestation in the Amazon, the maturing of ongoing activities and the successes achieved to date. The Plan is under its 3rd revision process, which aims to be finished until July 2012.

22. The PPCerrado, launched in September 2010, aims to promote sustained reduction in the rate of deforestation and forest degradation, as well as in the incidence of fires and forest fires in this biome. The PPCerrado guidelines include: the integration and improvement of monitoring and control activities by the federal agencies aimed at the environmental regulation of rural properties, sustainable forest management and firefighting; land use planning for conserving biodiversity, protecting water resources and encouraging the sustainable use of natural resources; promotion of environmentally-sustainable economic activities, maintenance of natural areas and restoration of degraded land. The PPCerrado is to be revised after the PPCDAm and its revision to be finished until the end of 2012.

23. In addition to these plans, the National Policy on Climate Change also asks for the preparation of sectoral plans for mitigating and adapting to climate change, with a view to consolidate a low carbon economy and meeting the national voluntary commitments announced under this policy. The sector plans could make a direct or indirect contribution to reducing deforestation and increasing the value of standing forest. The Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture (ABC Plan), for example, seeks to ensure continuous and sustainable improvement of management practices which reduce greenhouse gas emissions and enhance atmospheric CO₂ uptake on vegetation and land used by the Brazilian farming sector. This plan should help to reduce pressure on forests by promoting the greater productivity of existing agricultural systems, sustainable management practices and recovery of degraded areas

24. In 2009 Brazil launched a program to promote environmental compliance by owners of private farmland as a cornerstone for improving land use practices. The Federal Program of Support to the Environmental Regularization of Rural Properties (*Programa Mais Ambiente*) aims to ensure environmental compliance in rural properties and land occupied by squatters. The Program is an instrument to strengthen rural environmental management at national level. It recognizes the roles and responsibilities of the state agencies regarding forest management and provides technical and political resources necessary to effective rural properties regularization while sets strategies to support rural production. The Program implementation is shared by federal, state and municipal governments and offers an opportunity for landowners and squatters to regularize the legal status of their properties in the event of having deforested land over and above the size of areas permitted by Law (Legal Reserves, RL), or of failing to maintain Areas of Permanent Preservation (APPs). Smallholders, land reform settlers, family farmers and traditional peoples/communities are special beneficiaries of the Program, and receive, free of charge, government support to restore the degraded APPs and RLs on

their lands, through technical assistance, environmental education, provision of seeds/seedlings and appropriate training. All this is intended to help farmers generate employment and income, especially for small-scale family settlements and traditional populations, and keep local economies running.

25. The National Policy on Climate Change also provides financial mechanisms aimed at supporting the implementation of the planned initiatives. The Amazon Fund (*Fundo Amazônia*), launched in August 2008, shows that Brazil is a pioneer at world level in the development of mechanisms to support actions aimed at REDD+ in developing countries. The Amazon Fund is basically a financial instrument aimed at raising grant funds, in Brazil and abroad, to help maintain the reduction of greenhouse gas emissions from deforestation in the Amazon. This initiative is a result of the Brazilian proposal to provide positive incentives for reducing deforestation emissions in developing countries presented at the 12th UNFCCC, held in Nairobi in 2006. In 2008, Norway, which had already committed USD 244 million, announced its intention to contribute a total of USD 1 billion to the Amazon Fund. In December 2010, a new financial contribution worth EUR 21 million was received from the Federal Republic of Germany.

26. The National Fund on Climate Change was established to secure resources to support projects and studies aimed at climate change mitigation and adaptation to its effects. The Fund's income derives from 60% of the tax on crude oil production and sales destined to the Ministry of the Environment (MMA). This is an innovative financial arrangement in developing countries. In the first two years of its implementation, the initial budget was BRL 620 million (approximately USD 355 million). Of this total, BRL 560 million is from loans destined to the production sector, managed by the BNDES. The remaining BRL 60 million will be managed and invested by the MMA, and could be transferred to States, municipalities research institutions and non governmental institutions on the basis of cooperation agreements and contracts. The Fund has already had projects approved in areas of sustainable forest management to the region of Caatinga. This year, the Fund will support the development of environmental management plans for Indigenous Lands in Caatinga and Cerrado, as well as more projects dealing with sustainable forest management in the region of Caatinga. Those target areas are the ones susceptible to desertification.

27. In June 2010 the MMA launched a participatory process to formulate proposals for a national REDD+ strategy with the active participation of different sectors of government and civil society. The recommendations arising from this process made a substantial contribution to the ministerial discussions in the drafting of the aforementioned national strategy. These discussions have been underway since 2010.

2. IDENTIFICATION OF OPPORTUNITIES TO MITIGATE GREENHOUSE GASES

28. Brazil has taken robust actions to mitigate GHGs, by controlling and overseeing the conversion of forests to other uses or coverage, and combating some of the main drivers of deforestation.

29. The Federal Government's ongoing efforts to implement policies and plans to promote sustainable development and the reduction of deforestation levels in the Amazon have resulted in a reduction of deforested areas from 27,700 km² in 2004 to only 6,200 km² in 2011. Brazil recognizes that other Forest conversion is taking place in other biomes, which require continuous monitoring. This is certainly the case of the Cerrado biome.

30. The Cerrado covers approximately 200 million ha of the Brazilian Central Plateau (24% of the country's total land area). As the second largest biome in South America it is home to the headwaters of three major South American river basins: the Tocantins-Araguaia, the Paraná-Plata and the São Francisco. Central position of the Cerrado means that its biome overlaps with others, such as the Atlantic and Amazon Forests, Caatinga and the Pantanal. The Cerrado is highly seasonal, with marked wet and dry seasons and rainfall between 800-1,800 mm. Approximately 90% of the annual rainfall occurs during the rainy season (between October and April).

31. One of the richest and most diverse savannas of the world (Lewinsohn and Prado, 2005⁴), The Cerrado is regarded as one of 34 global biodiversity hotspots (Mittermeier et al., 2005⁵) owing to the high level of endemism and rapid loss of habitat. The Cerrado landscape is a vegetation mosaic ranging from open grasslands to forest formations, varying in structure, composition and levels of deciduity (Ribeiro and Walter, 1998⁶). Riparian forests exist throughout the region, occupying 5% of the Cerrado area and containing about 32% of its biodiversity. The Cerrado possesses the greatest diversity of plants of all tropical savannas, containing some 12,000 species (Mendonça et al., 2008⁷). The species of herbaceous layer of the Cerrado is predominantly endemic (Munhoz and Felfili, 2006⁸). Three regional centers of biodiversity in the Cerrado (Southeast, Northeast and Central Cerrados) have been identified, related to the polygons of drought and frost and to different altitudes (around 400-500m or from 900-1,000m) (Castro, 1994⁹).

32. Around 8% of the Cerrado biome consists of Protected Areas. Of this total, 2.85% are for strict protection and 5.36% are for sustainable use. Indigenous lands occupy about 4.4% of the biome.

33. The Cerrado ecosystems are controlled by the interaction between water and nutrient availability and disturbance (e.g. fire). It is essential to understand the changes in the distribution of the biomass (above and below ground) and of organic soil matter in different forest physiognomies of the Cerrado in order to estimate greenhouse gas emissions arising from deforestation. The structural diversity of vegetation types in the Cerrado involves a wide spectrum of total biomass amounts. Total biomass (the sum of biomass above and below ground up to 2m deep) in Central Brazil varies from 21.8 Mg/ha in the *campo sujo* (parkland) to 77.8 Mg/ha in dense Cerrado (dry forest). The root/shoot ratio in all the Cerrado vegetation types shows values above 1, ranging from 2.6 in the open Cerrado (woodland) to 7.7 in *campo limpo* (grassland) (Castro and Kauffman, 1998¹⁰). Delitto and Burger (2000) reported a total above-ground biomass of about 136 Mg/ha for a gallery forest located in southeast Cerrado. However, the organic matter in the soil represents the most substantial carbon stock in the Cerrado's ecosystems as shown by Abdala (1993) in his study of carbon stocks in different segments of a typical Cerrado area. The total estimated carbon stock amounts to 265 Mg/ha, with soil organic matter comprising 70% (185 Mg/ha), when considering the vegetation and the soil up to 1m depth.

34. Grace et al. (2006) estimated for the tropical savannas, including the Cerrado, a carbon uptake of 0.14 Mg C ha/year, contributing to a total of 0.39 Gt C/year, representing up to 15% of all carbon fixed by vegetation in the world. Measurements of seasonal flows of CO₂ in a typical Cerrado indicate that this ecosystem is a CO₂ sink during the rainy season, as well as being a source of CO₂ for a brief period at the end of the dry season (Miranda et al, 1996¹¹; Miranda et al, 1997).

35. The Cerrado has a highly seasonal climate with burning events occurring mainly in the end of the

⁴ Lewinsohn, TM & Prado, PI, 2005, 'How many species are there in Brazil?', *Conservation Biology*, vol. 19, no. 3, p. 619-624.

⁵ Mittermeier, RA, Gil, PR, Hoffman, M, Pilgrim, J, Brooks, T, Mittermeier, CG, Lamoreux, J & Fonseca, GAB, 2005, *Hotspots revisited: earth's biologically richest and most endangered terrestrial ecoregions*, 2nd edn, University of Chicago Press, Boston, USA.

⁶ Ribeiro, JF & Walter, BMT, 1998. 'Fitofisionomias do bioma Cerrado' in Sano, SM, & Almeida, SP (ed) *Cerrado: ambiente e flora*, Embrapa Cerrados, Planaltina, Brasil, pp. 89-166.

⁷ Mendonça, RC, Felfili, JM, Walter, BMT, Silva Júnior, MC, Rezende, AV, Filgueiras, TS, Nogueira, PE & Fagg, CW, 2008. 'Flora vascular do bioma Cerrado: checklist com 12.356 espécies' in Sano, SM., Almeida, SP, & Ribeiro, JF, *Cerrado: ecologia e flora*, Embrapa Informação Tecnológica. v. 2, pp. 421-442, Brasília, Brasil.

⁸ Munhoz, CBR, & Felfili, JM, 2006, Fitossociologia do estrato herbáceo-subarbusivo de uma área de campo sujo no Distrito Federal, *Acta Botanica Brasilica*, vol. 20, no. 3, p. 671-685, Brasil.

⁹ Castro, A, 1994, 'Comparação florística de espécies do cerrado', *Silvicultura*, vol. 15, no. 58, p. 16-18.

¹⁰ Castro, EA, & Kauffman, JB, 1998, 'Ecosystem structure in the Brazilian Cerrado: a vegetation gradient of aboveground biomass, root mass and consumption by fire', *Journal of Tropical Ecology*, vol. 14, no. 3, p. 263-283.

¹¹ Miranda, HS, Rocha e Silva, EP, & Miranda, AC, 1996, 'Comportamento do fogo em queimadas de campo sujo', in Miranda, HS, Saito, CH, & Dias, BFS, *Impactos de queimadas em áreas de cerrado e restinga*, Universidade de Brasília. p. 1-10, Brasília, Brasil.

dry season (May through September) (Coutinho 1990¹²). Burnings clearly release the nutrients retained in plant tissues or in litter on the soil surface. The rapid release of these organic nutrients can promote a temporary enrichment of the soils but can also cause the loss of nutrients through the export of ashes, erosion, or leaching through the soil profile and to streams (Kauffman et al. 1994¹³). The biomass burned annually associated with forest and Cerrado conversion to pastureland and its annual maintenance contributes significantly to the atmospheric loading of pollutants in Brazil. The emission of aerosol particles, other GHG and trace gases which contribute to the formation of ozone in the troposphere and strongly affect the oxidizing power of the atmosphere, cloud dynamics and microphysics, and C uptake by the forest. In addition to water vapor and CO₂, biomass burning is a major source of other compounds such as carbon monoxide (CO), volatile organic compounds, nitrogen oxides (NO_x), hydrocarbons (CH₄ and NHMC) and organic halogen compounds (Andreae and Merlet 2001¹⁴). In the presence of abundant solar radiation and high concentrations of NO_x, the oxidation of CO and hydrocarbons results in ozone (O₃) formation. Undoubtedly, biomass burning emissions have a strong impact on the tropospheric and stratospheric chemical composition and are an important agent of weather and climate change. The load of fine fuel (e.g., dead grass, twigs, and dead wood) varies with the degree of woodiness (Miranda et al. 2002¹⁵). The high mortality rate after several cycles of prescribed fires (Sato et al. 1998¹⁶) suggests that frequent fires change the physiognomy of the vegetation to a more open form (with higher grass biomass) favoring the occurrence of more intense fires (Miranda et al. 1996¹⁷). Besides decreases in plant biomass, frequent fires affect net ecosystem productivity. Ecosystem CO₂ flows were lower in a frequently burned Cerrado (1.4 MgC ha⁻¹) than in an area protected from fire (2.6 MgC ha⁻¹) (Breyer 2001). Frequent burning also increased wet season soil respiration (Pinto et al., 2002¹⁸). Repeated fire events over the long term may result in significant net loss of nutrients from this ecosystem and reduce plant productivity. Compared to Amazonian forests, where the rapid cycling of nitrogen supports large emissions of N₂O and NO, emissions of these gases in the Cerrado region are naturally very low (Bustamante and Nardoto, 2003¹⁹; Pinto et al. 2002), but clearing natural vegetation, burning, and fertilization of agricultural lands have been identified as causes of increasing N₂O and NO emissions (Pinto et al. 2006²⁰, Carvalho et al. 2006²¹).

¹² Coutinho, LM, 1990, 'Fire in the ecology of the Brazilian Cerrado', in Goldammer, JG, *Fire in the tropical biota: ecosystem processes and global challenges*, Springer-Verlag, pp. 82-103, Berlin, Germany.

¹³ Kauffman, JB, Cummings, DL, & Ward, DE, 1994, 'Relationships of fire, biomass and nutrient dynamics along a vegetation gradient in the Brazilian cerrado', *Journal of Ecology*, vol. 82, no. 3, p. 519-531.

¹⁴ Andreae, MO, & Merlet, P, 2001, 'Emission of trace gases and aerosols from biomass burning', *Global Biogeochemical Cycles*, 15: 955-966.

¹⁵ Miranda, HS & Bustamante, MMC, 2002, 'The fire factor', in Oliveira, PS, & Marquis, RJ, *The cerrados of Brazil: ecology and natural history of a Neotropical savanna*, Columbia University Press, pp. 51-68, New York, USA

¹⁶ Sato, MN, Garda, AA, & Miranda, HS, 1998, 'Effects of fire on the mortality of woody vegetation in Central Brazil', in Viegas, DX, *International Conference on Forest Fire Research*, University of Coimbra, pp. 1777-1784.

¹⁷ Miranda, HS, Rocha e Silva, EP, & Miranda, AC, 1996, 'Comportamento do fogo em queimadas de campo sujo', in Miranda, HS, Saito, CH, & Dias, BFS, *Impactos de queimadas em áreas de cerrado e restinga*, Universidade de Brasília, Pp. 1-10, Brasília, Brasil.

¹⁸ Pinto, AS, Bustamante, MMC, Kisselle, K, Burke, R, Zepp, R, Viana, LT, Varella, RF, & Molina, M, 2002, 'Soil emissions of N₂O, NO and CO₂ in Brazilian Savannas: effects of vegetation type, seasonality and prescribed fires', *Journal of Geophysical Research*, vol. 107, no. 57, pp. 1-9.

¹⁹ Nardoto, GB, & Bustamante, MMC, 2003, 'Effects of fire on soil nitrogen dynamics and microbial biomass in savannas of Central Brazil' *Pesquisa Agropecuária Brasileira*, vol. 38, no. 8, pp. 955-962.

²⁰ Pinto, AS, Bustamante, MMC, Da Silva, MRSS, Kisselle, K, Brossard, M, Kruger, R, Zepp, RG, & Burke, RA, 2006, 'Effects of different treatments of pasture restoration on soil trace gas emissions in the Cerrados of Central Brazil', *Earth Interactions*, vol. 10, no. 1, pp. 1-26.

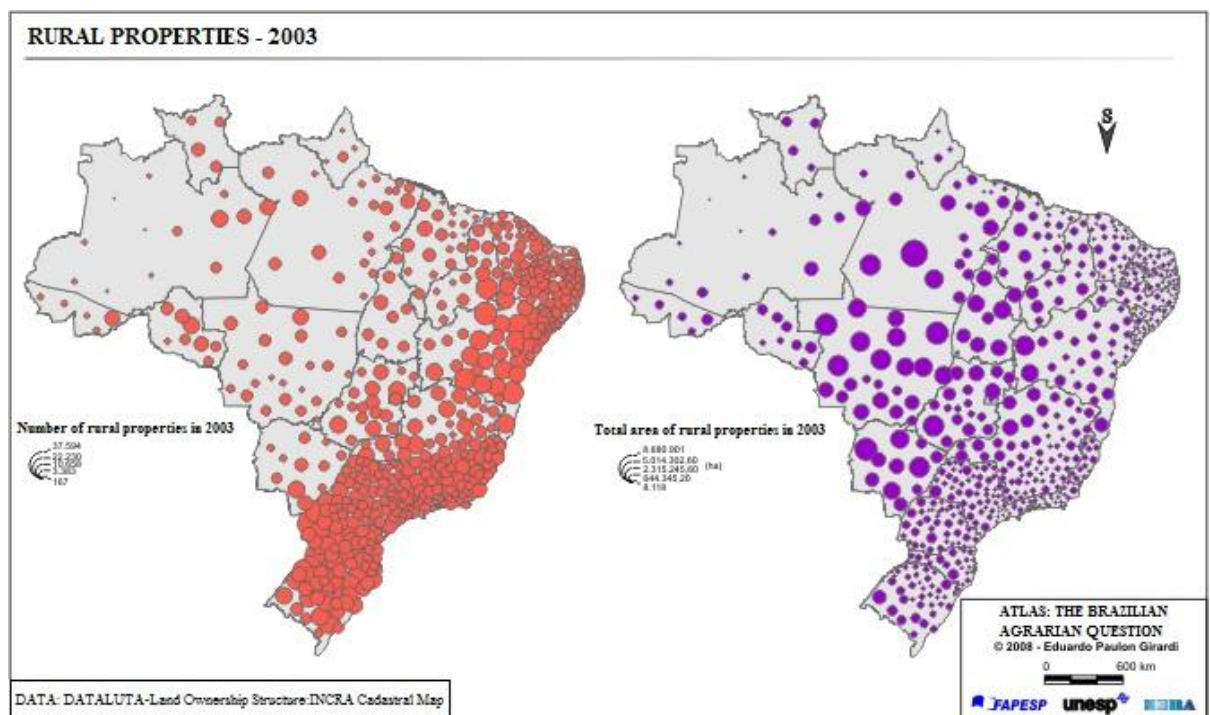
²¹ Carvalho AM, Bustamante MMC, Kozovits AR, Miranda LN, Vivaldi LJ, Souza DM, 2006, 'Emissões de NO e N₂O associadas à aplicação de uréia ao solo sob plantio direto e convencional', *Pesquisa Agropecuária Brasileira* vol 41, no 4, pp. 679-685.

36. From the 1960s, the Cerrado biome began to receive public and private infrastructure investments which boosted agricultural production in the region. The Cerrado is now responsible for more than half of the soybean production in Brazil. Agriculture occupies around 22 million ha, involving mechanized farming on large tracts of land and the widespread use of chemical inputs to correct soil acidity and enhance fertility. The use of crop rotation is still limited. More recently, the adoption of less harmful and more sustainable practices is increasing throughout the area. The no-tillage practice for example, was introduced in 1980s and has gained wide acceptance.

37. It is estimated that in the Cerrado there are around 50 million heads of cattle, almost 33% of the national herd, on 54 million ha of grassland. Approximately 50 to 60% of this area is degraded to a greater or lesser extent.

38. In 2003 rural properties in Brazil occupied 49.1% of the total land area of the country, with the Center-West (mainly Cerrado) accounting for the highest proportion (32% of the total area of the country), and with the largest average area of rural properties in the entire country (397.2 ha) (see Figure 5).

Figure 5 – Number and total area of rural properties in Brazil showing contrasting land ownership structure among regions



39. The number of rural properties is estimated on 1.032 million in the 11 Cerrado states, with some 795 thousand from family farmers. It is noteworthy that around 10% of this total is rural properties managed by women.

40. Agricultural activity is set to continue to increase in the Cerrado region for some time, given that it still possesses very large areas with agricultural and forestry potential. These areas are likely to become gradually more accessible and thus more attractive to investment and might take advantage of increasing prices in the fiber and agricultural products markets.

41. Estimates suggest that deforestation in the Cerrado is proportionally more severe than that of the Amazon. During the period 2002-2008, Amazon deforestation represented 3.2% of the area of the biome (with clear signs of continuing reduction), with 82% of the original forested area remaining, while over the same period the Cerrado biome rather lost 4.1% of its cover and only 52% of the area covered by native vegetation remains (Figure 6).

42. Changes in the Cerrado landscape have already increased wet season river discharge (Costa et al.

2003²²), where pastures and crops have replaced the deep rooted native vegetation that can tap water from deep soil layers (Oliveira et al. 2005²³, Ferreira et al. 2006²⁴). The regional CO₂ and energy balances have also changed (Potter et al. 2009²⁵). Well-managed cultivated pastures may provide enough organic C to maintain soil C contents (Roscoe et al. 2001²⁶; Santos et al. 2004²⁷). However, most of the pastures are in an advanced stage of degradation and C inputs from degraded low-productive pastures may be too low to sustain the high soil C storage under native Cerrado (100 Mg C ha⁻¹ for 100 cm soil depth). Between 2003 and 2008, the emissions from deforestation and burning (including CH₄ and N₂O emissions) of Cerrado areas resulted in the emission of 1450 Mt CO₂eq. Of this total, the conversion to pastures corresponds to approximately 820 Mt CO₂ eq (Bustamante et al. in press²⁸).

43. In this context, the generation and provision of spatially and temporally consistent information and data on the forest resources of this biome is needed to underpin the elaboration of strategies for improving land-use sustainability and efficiency. These actions would contribute to the maintenance of natural ecosystems, together with their biodiversity and associated environmental services. The forest resources information will need to take into account both the environmental heterogeneity of the biome and the way it is being occupied.

44. Access to accurate and updated information on forest resources will assist public and private sector decision-makers. It should also improve forest conservation-based rural development standards and help to promote sustainable practices with decreased environmental impacts, which in turn would raise the value of forest resources, increasingly regarded as an important socioeconomic and environmental asset.

45. The improved coordination and integration of monitoring and command and control tools should also help to reduce illegal logging. Such measures would also help to extend the scope of public policy instruments, including for example access to rural credit to strengthen agricultural production verticalization and increase productivity as well as environmental sustainability (as foreseen in the ABC Plan).

46. The adoption of appropriate agricultural practices in accordance with the APP and RL requirements should contribute to increased productivity, thus consolidating the agricultural frontier and decreasing the pressure on further deforestation in the Cerrado. The new and more productive technologies developed for tropical agriculture make it possible to increase production without resorting to horizontal expansion into new areas of the Cerrado. In order to reach a balance between production and conservation in this biome it is necessary to promote a widespread adoption of better agricultural techniques. It is equally necessary to develop policies and actions at the state level in order

²² Costa, MH, A. Botta, A, Cardille, J.A, 2003, 'Effects of large-scale changes in land cover on the discharge of the Tocantins River, Southeastern Amazonia', *Journal of Hydrology*, vol. 283, no. 12, pp. 206-217.

²³ Oliveira, RS, Bezerra, L, Davidson, EA, Pinto, F, Klink, CA, Nepstad, DC, & Moreira, A, 2005, 'Deep root function in soil water dynamics in cerrado savannas of central Brazil', *Functional Ecology*, no. 19, pp. 574-581.

²⁴ Ferreira, JN, Bustamante, MMC, Garcia-Montiel, DC, Caylor, KK, Davidson, EA, 2007, 'Spatial variation in vegetation structure coupled to plant available water determined by two-dimensional soil resistivity profiling in a Brazilian savanna', *Oecologia*, no. 153, pp.417-430.

²⁵ Potter, C, Klooster, S, Huete, AR, Genovese, V, Bustamante, MC, Ferreira, LG, Oliveira Jr, RC, & Zepp, R, 2009, 'Terrestrial carbon sinks in the Brazilian Amazon and Cerrado Region predicted from MODIS Satellite Data and ecosystem modeling' *Biogeosciences Discussions*, no. 6, pp. 1-23.

²⁶ Roscoe, R, Buurmann, P, Velthorst, EJ, & Vasconcellos, CA, 2001, 'Soil organic matter dynamics in density and particle size fractions as revealed by the 13C/12C isotopic ratio in a Cerrado's Oxisol', *Geoderma*, no. 104, pp.185-202.

²⁷ Santos, AJB, Quesada, CA, Silva, GT, Maia, JF, Miranda, HS, Miranda, AC, & Lloyd J, J, 2004, 'High rates of net ecosystem carbon assimilation by Brachiaria pasture in Brazilian cerrado' *Global Change Biology* no. 10, pp. 877-885.

²⁸ Bustamante, MC, Nobre, C, Smeraldi, R, Aguiar, APD, Barioni, LG, Ferreira LG, Longo, K, May, P, Pinto, AS, Ometto, JPHB, 2012 'Estimating Greenhouse Gas Emissions from Cattle Raising in Brazil', *Climatic Change* (in press).

to ensure compliance with the rules governing APPs and RLs. **Table 2** indicates the potential GHG emission reduction by each mitigation technology supported by ABC Plan in Brazil.

Figure 6 – Cerrado – area of the Cerrado Biome and vegetation cover in 2010

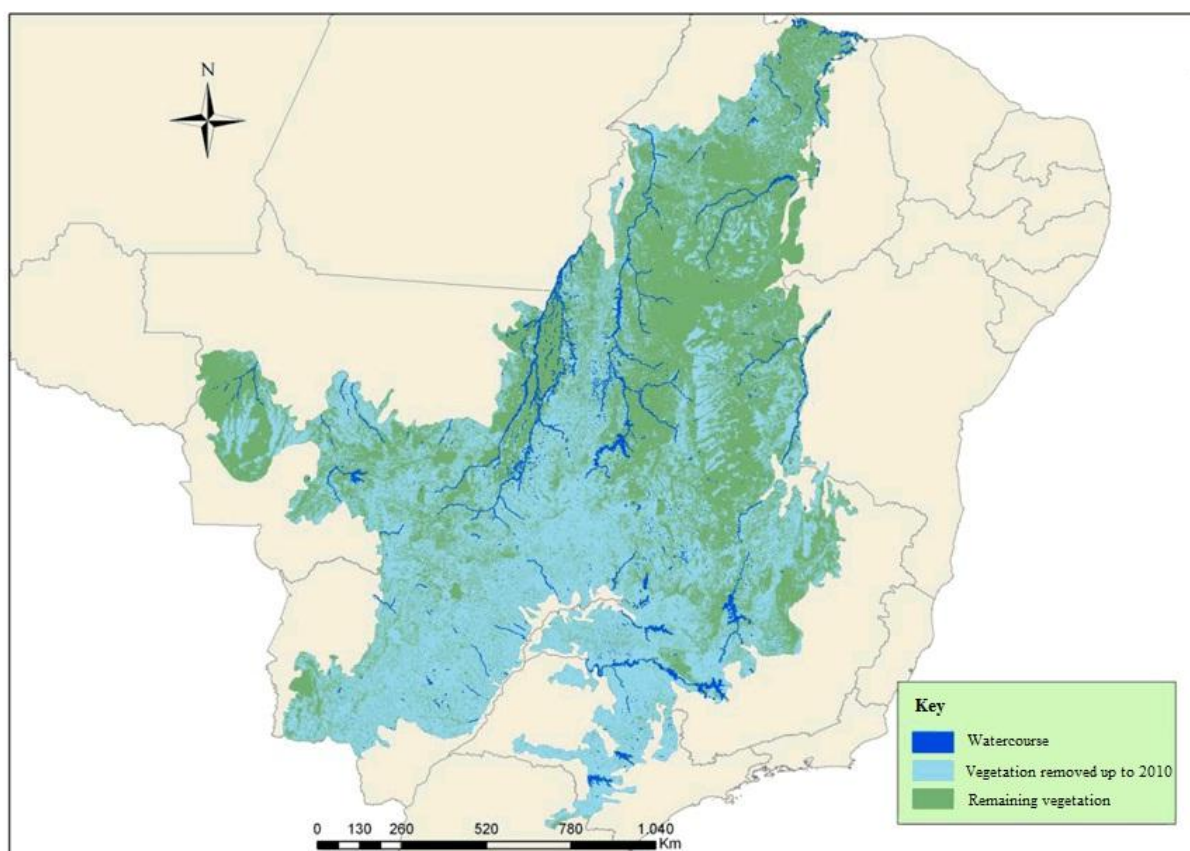


Table 2 – Potential GHG emission reduction by each mitigation technology supported by the ABC Plan

ABC Plan technologies	Agriculture objective to 2020	
	Area (million ha)	Million CO ₂ eq/year
1. Recovery of degraded pasture land	15.0	104.0
2. Crop-livestock-forest integration	4.0	22.0
3. No-tillage planting	8.0	20.0
4. Biological nitrogen uptake	5.5	10.0
5. Planting of commercial forests	3.0	10.0
6. Treatment of animal waste		7.0

Source: Plano Setorial de Mitigação e de Adaptação às Mudanças Climáticas para a Consolidação de uma Economia de Baixa Emissão de Carbono na Agricultura. MAPA 2010.

47. The **Brazil Investment Plan** strategy mainly targets the following FIP investment areas: *Investments outside the forest sector necessary to reduce the pressure on forests*; and *Institutional capacity, forest management and information*. As a complementary measure, the Plan also focuses on the third FIP investment area by supporting *Mitigation actions related to forests*, such as promotion of training initiatives for the adoption of sustainable and innovative technologies, both in the forestry and agricultural sectors, the integration of forest and agricultural systems, the reforestation and restoration of RLs and APPs in landholdings. The IP will therefore contribute to the efforts being undertaken by the Government of Brazil to reduce emissions and maintain the carbon stock of the country's second largest biome. The many lessons learned in the course of designing and implementing programs and actions that have led to significant reduction of deforestation in the Amazon can contribute significantly to the development and implementation of programs and similar actions in the Cerrado,

which the Investment Plan proposes to support.

3. POLITICAL AND INSTITUTIONAL STRUCTURE

48. Brazil has an institutional, normative and policy structure with proven capacity for reducing deforestation and promoting the sustainable use of natural resources, especially in the Amazon. This structure comprises the following:

- a. Forestry legislation that ensures an important role for the public sector in land management, setting rules and regulations for the use of private land with the intention of benefiting society as a whole. These requirements include stipulating that every farm in the Cerrado should have a Legal Reserve (RL) of native vegetation cover of 20-35% of the private landholding. requires private landholders to protect the natural vegetation in areas at risk of generating erosion, storm water runoff or deterioration of the protective role of the headwaters and the edges of water bodies, which are known as Areas of Permanent Preservation (APPs). It is necessary to seek official authorization from the relevant state agencies to convert forests other than RL and APP to other uses permitted by law.
- b. Environmental legislation that requires environmental licensing for several potentially polluting activities associated with land or forest use, and establishes penalties and civil and criminal liability for offenders.
- c. Deforestation control plans that benefit from collaboration and coordination between various civil and military authorities at the federal and state levels.
- d. A land management policy that includes the designation of land for use by indigenous peoples or local communities for nature conservation and sustainable production purposes or for strict protection. This policy ensures that the public sector plays an important role in managing forest resources. Public forests, including Indigenous Lands, which occupy up to 200 million ha and are mainly located in the Amazon region.
- e. A land tenure policy that seeks to identify the owners of property rights and those responsible for land occupation. The aim of this is to reduce incentives for illegal land occupation as well as the opportunities for converting forests to other uses.
- f. Institutional responsibilities structured at the three levels of government to involve the public sector in the management of forest resources (discussed in more detail in the next section).
- g. A mechanism for ensuring collaboration and participation between the public sector and civil society on issues concerning forest resources policies and management.
- h. Mechanisms for financing productive activities and the protection of forest resources and their environmental functions.
- i. Systems for monitoring changes in vegetation cover in the Amazon region. A clearly defined methodological strategy for implementing a national forest inventory.
- j. An established policy, institutional arrangements and expertise in preventing and combating forest fires.
- k. An expertise in agricultural research and knowledge dissemination to enable increased production in the already occupied areas.

49. In addition to the above, there is room for refining, reinforcing and improving the effectiveness of these various instruments, rules and policies in order to satisfy the needs of the country in the various biomes.

50. The next section details the institutional responsibilities of the various parties involved in the public management of forest resources in Brazil.

Public Management of Natural Resources in Brazil

51. The **Ministry of Environment (MMA)** is responsible for the following areas in relation to forest resources: I - national policy on the environment and water resources; II - policies on preservation, conservation and sustainable use of ecosystems, biodiversity and forests; III - strategies, mechanisms and economic/social instruments for improving environmental quality and the sustainable use of natural resources; IV - policies for balancing the environment and production; V - environmental policies and programs for the Legal Amazon, and VI - ecological and economic zoning. In order to perform its mandate, the MMA has various secretariats and specialist institutions:

- **Secretariat of Climate Change and Environmental Quality (SMCQ)**, under the auspices of the MMA, is responsible for proposing policies and strategies related to the different types of pollution, environmental degradation and environmental hazards such as: waste harmful to health and the environment; environmental impact assessments and licensing; promotion of chemical safety; monitoring environmental quality; and, finally, the development of new instruments to improve environmental management and an environmentally sound energy matrix. The SMCQ is also responsible for designing strategies and policies on the mitigation of, and adaptation to, climate change and for coordinating the Executive Group of the Interministerial Committee on Climate Change. The Interministerial Committee and its Executive Group are in charge of the National Plan on Climate Change and the drafting and revision of the Sectoral Plans for Adaptation and Mitigation in several sectors and the national REDD+ strategy.
- **Secretariat for Extractivism and Sustainable Rural Development (SEDR)** from MMA is responsible to promote sustainable development by proposing policies, strategies and studies in themes like land management; environmental management of coastal areas, agro extraction; productive chains for social and biodiversity products; restoration of rural degraded areas; sustainable biofuel production; aquiculture environmental planning; forest recuperation policies; tourism environmental sustainability. SEDR also coordinates the Economic-Ecologic Zoning (ZEE), promotes the adoption of environmentally sound technologies in agriculture, extractivism, and its productive chains, and encourages the involvement of traditional communities, indigenous peoples and settlers in environmental planning and management. Furthermore it executes public policies regarding international environmental agreements ratified by the Government of Brazil.
- **Brazilian Forest Service (SFB)** is a federal agency linked to MMA. It manages federal public forests for the sustainable production of goods and services. Its mission is to reconcile forest use and conservation, enhancing the value of forests to benefit the present and future generations through public forest management, knowledge building, capacity building and offering specialized services. It also has the responsibility of providing information in support of public and private sector decision-making, forestry training and fostering the forest sector. The SFB is also responsible for the National Forest Inventory (NFI) and National Forest Information System (NFIS). **The Public Forest Management Commission (CGFLOP)** is the advisory body of the Brazilian Forest Service. Its purpose is to advise, assess and propose guidelines for the management of public forests in Brazil and to contribute to the Annual Forests Concessions Plan.
- **Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA)** is a federal agency linked to the MMA. Its main functions are the following: policing the environment; environmental licensing under the aegis of federal jurisdiction; control of environmental quality; authorizing the use of natural resources; zoning; environmental impact assessments; forest and environmental monitoring; levying administrative penalties; generation and dissemination of information and data on the environment; environmental monitoring, especially with

regard to the prevention and control of deforestation, brush-burning and forest fires; and the establishment of criteria for managing the use of forest resources.

- **Chico Mendes Institute for Biodiversity Conservation (ICMBio)** is a federal agency linked to the MMA. It is responsible for executing the actions required by the National Protected Areas System (SNUC). Its remit also covers proposing, implementing, managing, protecting, supervising and monitoring the federal sustainable use and integral protection Protected Areas (CUs).

52. The **Ministry of Agriculture, Livestock and Food Supply (MAPA)** is responsible for public policies aimed at boosting agriculture, agribusiness and promoting the regulation and standardization of services related to the agricultural sector. MAPA seeks to integrate marketing, technological, scientific, environmental and organizational aspects of the productive sector and supply sectors, storage and transport of crops and overseeing agribusiness-related economic and financial policy. By integrating sustainable development and competitiveness, MAPA aims to ensure that food is available for domestic as well as external consumption. Food production enhances the national productive sector and food exports increase Brazil's economic position in the global market. The following are the relevant MAPA secretariats and specialized institutions:

- **Secretariat for Agricultural and Cooperative Development (SDC)** is primarily responsible for the adoption of sustainable practices in Brazilian agribusiness. Its mandate encourage cooperatives, sustainable agricultural practices, the development and use of new technologies, intellectual property protection, infrastructure and production logistics, transportation and crop storage. The SDC is structured in four Departments, two of which are particularly important in relation to forest resources. The Cooperatives and Associations Department (DENACOO) is responsible for promoting partnership arrangements between cooperatives and encouraging them to take advantage of the opportunities offered by international trade as a way of broadening the cooperative sectors' economic share in the country's export effort. The SDC also promotes policies to encourage cooperatives' among young people and women, as part of a campaign to improve their social inclusion and economic participation in society. The Production Systems and Sustainability Department (DEPROS) is charged with regulating and encouraging sustainable farming practices that preserve the environment and natural resources. The main policies developed by DEPROS relate to organic food production (agro ecology), Integrated Production Systems for tracking and quality control of production, and Land and Water Conservation Systems aimed at maintaining and recovering degraded areas.
- **Brazilian Agricultural Research Corporation (Embrapa)** is engaged in research, development and innovation with a view to finding solutions for sustainable agriculture (including natural and planted forests) for the benefit of Brazilian society.

53. The **Ministry of Science, Technology and Innovation (MCTI)** is responsible for: (i) the formulation of the national policy for scientific and technological research and innovation; policies for developing information technology and automation; the national policy on biosafety; (ii) Brazil's space policy; and (iii) Brazil's nuclear policy and the control of exports of sensitive goods and services. The MCTI's mandate also covers planning, coordination, supervision and control of science and technology activities. The following are this ministry's relevant secretariats and specialized institutions:

- **Secretariat for Research and Development of Policies and Programs (SEPED)** is responsible for deploying policies and programs aimed at developing science, technology and innovation in Brazil. It focuses on Engineering, Earth and Life Sciences and other areas of strategic interest concerned with the surveying and sustainable use of national assets, especially in the areas of Biodiversity, Ecosystems, Meteorology, Climatology, Hydrology, Marine Sciences, Antarctica, Clean Development Mechanisms and Global Climate Change. The **General Coordination for Management of Ecosystems and Biodiversity (CGEC)**, under the aegis of

SEPED, is responsible for informing and monitoring the implementation of strategic research programs, projects and activities for identifying elements relevant to the functioning of ecosystems, encompassing the physical and biotic environment and temporal, spatial and social dynamics. The overall aim of CGEC is to design public ST&I policies for the conservation and sustainable exploitation of natural resources. In this respect, the Secretariat coordinates the implementation of various programs, structured as a series of research networks: the Large Scale Biosphere and Atmosphere Experiment in the Amazon; the Thematic Research Network on Environmental Modeling of the Amazon; the Amazon Scenarios Project: land use, biodiversity and climate; Research Networks on the Pantanal biome; and the Research Network for the Sustainable Use and Conservation of the Cerrado. The mandate of the **General Coordination for Global Climate Change (CGMC)** is to **coordinate and oversee the implementation of actions and policies in Brazil** under the UN Framework Convention on Climate Change (UNFCCC), including the Kyoto Protocol. Its work covers the coordination and publication of studies and scientific research on global climate change, especially with regard to the Intergovernmental Panel on Climate Change (IPCC). Other programs under the CGMC mandate include the National Climate Change Program and the Brazilian Research Network on Global Climate Change (*Rede Clima*). The purpose of the latter to generate and disseminate knowledge about the causes and effects of global climate change in 3 sub-networks: Oceans, Environmental Services of Ecosystems and Natural Disasters. The Secretariat also promotes liaison with research and development agencies and other public and private entities involved in implementing the National Policy on Climate Change. These activities ensure that the CGMC is an essential pillar in support of the Research and Development activities conceived under the National Plan on Climate Change. Finally, the CGMC is responsible for preparing the National Communication on GHG emissions in Brazil and for the Presidency and Executive Secretariat of the Interministerial Commission on Global Climate Change.

Social Participation in the Public Management of Natural Resources

54. In addition to public hearings and consultations held in local communities in the specific situations foreshadowed by current legislation, the following two collegiate institutions enable social participation in decision-making processes related to the forest resources management:

- The **National Environment Council (CONAMA)** is the consultative and deliberative council of the National Environmental System (SISNAMA). It is a collegiate body that represents federal, state and municipal environment agencies, the private business sector and civil society.
- The **National Forest Commission (CONAFLOR)** provides guidelines for implementing the actions of the National Forest Program (PNF) and is a useful vehicle for coordinating participation by various groups interested in developing public policies for the Brazilian forest sector.
- The **National Commission for the Sustainable Cerrado Program (CONACER)** promotes the integration of programs, projects and sectoral policies related to the Cerrado biome. The CONACER is composed of representatives from: (i) MMA; (ii) ICMBio; (iii) Ministry of Agrarian Development (MDA); (iv) Embrapa; (v) Brazilian Society for the Progress of Science (SBPC); (vi) Brazilian Association of State Environmental Entities (ABEMA); (vii) civil society organizations (including representatives of network NGOs of indigenous and local Communities); and, (viii) the rural productive sector. The Commission may invite other institutions during project execution as necessary.

55. The Government of Brazil has also created the **Brazilian Forum on Climate Change (FBMC)**

in order to "raise awareness of and mobilize members of society to engage in discussion and decision-making" regarding the impact of emissions generated by human activities, including LUCF, and which tend to intensify the greenhouse effect. The FBMC is chaired by the President of the Republic, and its membership comprises Brazilian ministers of state, the heads of regulatory agencies, state environment secretaries, together with representatives from the business sector, civil society, academia and NGOs. The Forum has an Executive Secretary appointed by the President, with a mandate to organize and participate in meetings and to adopt appropriate measures for executing works and other activities.

56. The Executive Secretary of FBMC organized sectoral dialogues in order to assemble contributions of use to the formulation of the PNMC. These consisted of meetings with representatives from various sectors aimed at tracking the actions already implemented, as well as at identifying future actions needed for implementation within the context of the priority structural themes that comprise the PNMC (discussed in more detail below). A number of different sectors (industry, forestry, finance, agriculture, forestry, municipal representatives, members of civil society and NGOs) contributed to these discussions. Given that the design of the IP provides for periodic reviews, this dialogue with society should be seen as a dynamic consulting mechanism allowing for ongoing interaction with the public managers responsible for updating the Plan. In this respect the FBMC is of great significance since, according to its institutional mandate, it occupies a prime position as an interlocutor between government and society. With respect to the States and the Federal District, the institutional arrangements for forest management vary, but in general terms the state environment secretariats are responsible for the formulation of forest policies and standards and the state environmental entities are charged with the licensing, control and monitoring of forestry and conservation activities. Some Brazilian states have established specific agencies for managing public forests. A similar arrangement exists in municipalities that have forest management structures. Social participation in managing forest resources in the different states falls, in most cases, within the purview of the state environmental councils.

Normative and institutional framework

57. Environmental management in Brazil is decentralized at the three levels of government – federal, state and municipal. States and municipalities are important players in the management of forest resources and must respond to local priorities and engage local support needed to fulfill their mandates. Responsibility for issuing deforestation permits and the majority of instances of environmental licensing rests with state and local municipal agencies. Recognizing the importance of continuously enhancing the discussion and coordination among the different levels of administration, the Government of Brazil is strengthening the collegiate bodies such as CONAFLO and the SISNAMA, both of which bring together public agencies from all three levels of government. More recently the MMA has incorporated in the design of its programs and plans a series of components to promote capacity building of state and/or municipal agencies in the expectation of encouraging more effective decentralization.

58. One example of this is the application of the Forest Code that provides for the retention of part of the natural vegetation cover in individual private farms as a Legal Reserve (RL) and Areas of Permanent Preservation (APPs). Application of these RL and APP rules was the responsibility of the Federal Government but has since been devolved to the states. States, such as Gois and Tocantins, have developed systems for monitoring compliance, issuing deforestation permits and fines to landowners failing to comply. The Investment Plan aims at contributing to enhance state and municipal mechanisms in order to enable them to undertake the tasks within their remit, including implementation of the Rural Environmental Cadastre (CAR), as set forth in the *Mais Ambiente* Program.

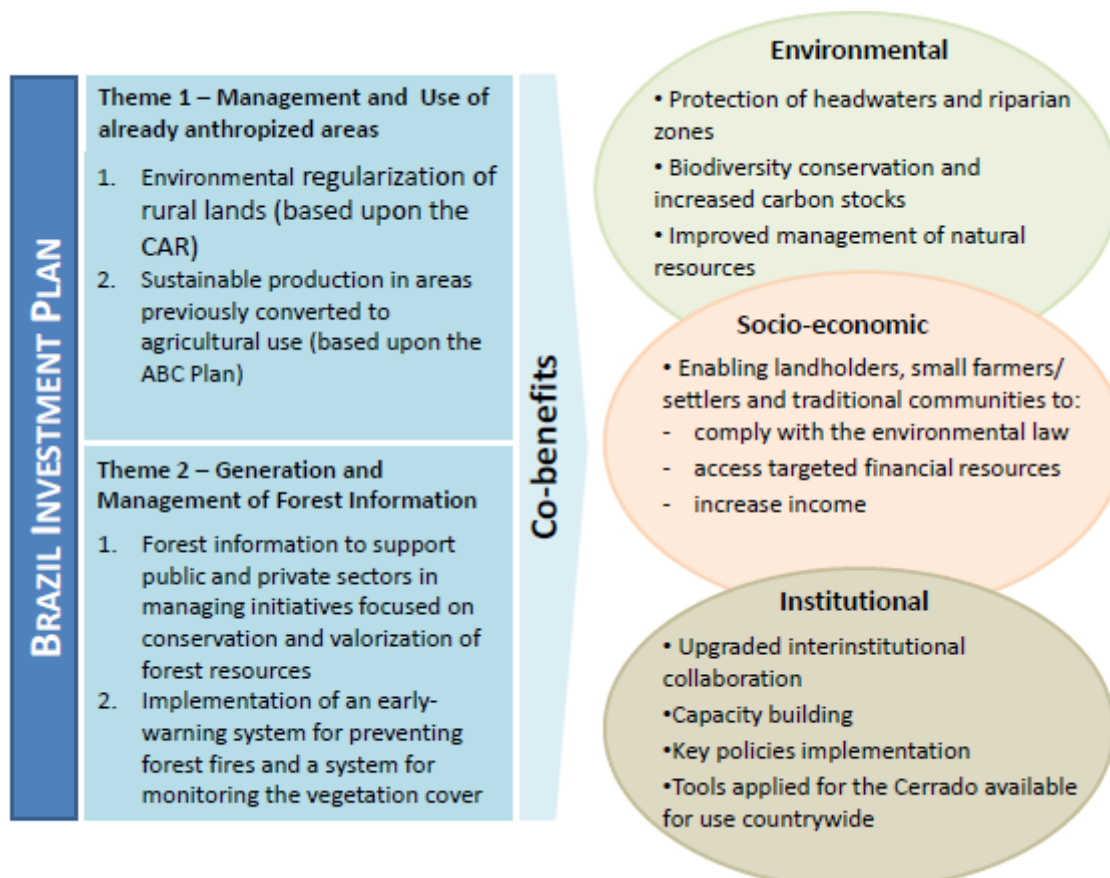
59. In order to introduce coherence needed to promote the sustainable use of natural resources, the Government of Brazil has created inter-institutional committees to manage the various programs and plans over recent years, such as the PPCDam, PPCerrado and ABC Plan. In this way the government has mobilized skills in a number of federal public administration sectors with a view to reducing deforestation and forest degradation and promoting sustainable land use. These mechanisms need to be

regularly updated to reflect changes in the economic situation of the country and the new knowledge and expertise available. The challenges include: the need for consistency between the various instruments employed; better coordination of efforts in the regions; more sharing of timely and relevant information; and sequencing partner activities that can generate inputs for further activities. Each of the projects under the Brazil Investment Plan will contribute to this joint effort by providing funding for activities and investments to improve actions undertaken by the various stakeholders and enhance their working relationships with the other government entities involved.

4. EXPECTED CO-BENEFITS FROM FIP INVESTMENT

60. The Brazil Investment Plan is expected to generate environmental, socio-economic and institutional co-benefits derived from its implementation. A major environmental co-benefit consists in biodiversity conservation in private productive lands. Additionally, the maintenance of environmental services like water and soil conservation derived from sound environmental practices to be adopted with support from FIP. The main socio-economic co-benefit is to allow land reform settlers, traditional communities and family farmers to fulfill required requisites to access targeted rural credit funds, enabling investments, thus contributing to poverty alleviation. Priority will be given to surrounding areas to indigenous territories and protected areas. The support to be provided by FIP implementation will generate institutional co-benefits mainly by improving project management capacity, inter-institution dialog, and enhancement of tools and methodologies, with benefits not only to Cerrado but also contributing to an improved management in other biomes in Brazil. **Figure 7** represents the expected co-benefits from the Brazil Investment Plan.

Figure 7 – Expected co-benefits from Brazil Investment Plan



61. **Table 3** summarizes the environmental, socioeconomic and institutional co-benefits expected from the investments supported by the FIP.

Table 3 – Environmental, socio-economic and institutional co-benefits from FIP investment

PROJECTS	CO-BENEFITS		
	ENVIRONMENTAL	SOCIO-ECONOMIC	INSTITUTIONAL
1.1- Environmental regularization of rural lands (based upon the CAR).	<p>a) Conservation of greater biodiversity and increase in genetic flows in the forested areas of the APPs and RLs, as well as in the remaining forests;</p> <p>b) Protection of soils and water resources;</p> <p>c) Protection of headwaters of the rivers that form the Pantanal and which are located in the Cerrado of the central plateau. These are vital for the continued existence of the large floodable areas, their biodiversity and sustainable use;</p> <p>d) Assistance to landholders and special beneficiaries (including family farmers and traditional communities) to comply with environmental requirements in order to enable them to access financial resources and other types of support for adopting the sustainable technologies enshrined in the ABC Plan.</p>	<p>a) Enabling landholders to access the resources and other assistance services provided under the ABC Plan;</p> <p>b) Assurance to landholders (including property owners, land squatters, land reform settlers, family farmers and traditional communities) that they are fulfilling part of the environmental legislation requirements, enabling them to undertake investment in agricultural products that will allow them to access a range of markets which require such compliance;</p> <p>c) Establishment of enabling requirements for landholders, (including land reform settlers and traditional communities) to access target rural credit as PRONAF;</p> <p>d) Increase of both employment and income for landholders (including land reform settlers and traditional communities) and other partners in the business chain generated by farming activities, therefore contributing to poverty alleviation.</p>	<p>a) Development or enhancement of policies, standards, methodologies and protocols for implementing the CAR at the national, state and municipal levels;</p> <p>b) Strengthening of support to IBAMA and to ICMBio to act in accordance with their mandate under CAR;</p> <p>c) Enhanced efficiency on management of the project, including monitoring and evaluation of its implementation and results;</p> <p>d) Establishment of partnerships between government and rural workers representative institutions to promote effective environmental law compliance in agribusiness and productive chains.</p>
1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan).	<p>a) Reduction of pressure for converting new native forest areas, thereby protecting existing biodiversity and carbon stocks;</p> <p>b) Reduction of erosion on cultivated land;</p> <p>c) Increase in rainwater infiltration;</p> <p>d) Improvement of the physical, chemical and biological conditions of the soil;</p> <p>e) Enhancement of the use of animal waste treatment for generating biogas, energy and compost, thereby reducing water and soil pollution; and</p> <p>f) Support to the environmental registration of</p>	<p>a) Continuous and sustained upscaling of conservation practices concerned with land use and management in the different sectors of the Brazilian agriculture which can contribute to reduce GHG emissions or increase carbon sequestration;</p> <p>b) Decrease in production costs and consequently increase in landholdings' income through augmented production and productivity by enhanced use of the following technologies: recovery of degraded pasture land, crop-livestock-forest integration, agro forest systems, direct planting (no-tillage) system, biological nitrogen fixation and planted forests.</p>	<p>a) Enhanced efficiency on management of the ABC Plan nationwide, as well as monitoring and evaluation of its implementation. It will also support other actions such as monitoring fires, fine-tuning the recommended technologies, undertaking studies focused on improving the operational and economic/financial efficiency of the ABC Plan from both the producer and social standpoints.</p>

PROJECTS	CO-BENEFITS		
	ENVIRONMENTAL	SOCIO-ECONOMIC	INSTITUTIONAL
	small rural landholdings.		
2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources;	<p>a) Increased knowledge on the forest and its different species, thereby contributing to the monitoring of the potential impacts of forest-related economic activities on local biodiversity and carbon stocks;</p> <p>b) Identification of areas of high-value for conservation and further research;</p> <p>c) Generation of relevant information for developing initiatives for the protection and management of local biodiversity, including the identification of environmental assets;</p> <p>d) Design of an information survey system that will be updated on a continuous basis (at least every 5 years) and that will allow the establishment of time series that can be used for modeling and establishing scenarios for the main variables assembled.</p>	<p>a) Promotion of educational and training opportunities for civil society, increasing its participation in forest resource management;</p> <p>b) Generation of relevant information for developing economic activities with a social focus and paying special attention to gender equity;</p> <p>c) Creation of business opportunities and additional income for local communities, promoting gender equity by valorizing forest and forest resources;</p> <p>d) Production of information and data that can be used on adaptation strategies to climate change by traditional communities and indigenous peoples;</p> <p>e) Development of skills and creation of jobs in the area of forest data collection, providing new employment opportunities in the areas of research and teaching based on NFI dataset.</p>	<p>a) Production of accurate and updated information to underpin decision-making by public managers;</p> <p>b) Development and management of initiatives for conservation and sustainable development;</p> <p>c) Strengthening and improvement of NFIS management in order to support efficient project management, including monitoring and evaluation of its implementation and results;</p> <p>d) Improvement of methodologies and expansion of partnerships with information-generating institutions, including more initiatives closely associated with forest resources (e.g. CAR, ABC Plan, and ZEE).</p>
2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover.	<p>a) Increased conservation of biodiversity and carbon stocks in the remaining forest areas through the reduction of the frequency and intensity of forest fires, thereby resulting in increased integrity of the forest ecosystems;</p> <p>b) Protection of soil and water resources;</p> <p>c) Promotion of the maintenance of the natural fertility of the soil which suffers less degradation from the high temperatures produced by fires, thereby reducing costs arising from the use of agrochemicals;</p> <p>d) Detection of areas that are vulnerable to socio-economic and environmental pressures, thereby lessening the risks of fragmentation and degradation of the</p>	<p>a) Enhanced capacity for land use planning and management in Brazil by generating environmental information at biome scale;</p> <p>b) Reduction of drivers of forest degradation and conservation of soil nutrients, thereby reducing the costs involved in restoring them in the Protected Areas and on private land, specially to small and medium farmers;</p> <p>c) Reduction of material and human losses resulting from uncontrolled fires and reduction of the risk of losses faced by conservation, agricultural, forest producers and public health;</p> <p>d) Updating legislation and policies related to controlled fires.</p>	<p>a) Development and management of existing initiatives for conservation and sustainable development.</p>

PROJECTS	CO-BENEFITS		
	ENVIRONMENTAL	SOCIO-ECONOMIC	INSTITUTIONAL
	Protected Areas and indigenous territories.		

62. The FIP investment plan implementation is also expected to have a co-benefit in poverty alleviation, as it will have direct impacts on areas such as settlements, and on small agriculture farmers, and will provide information on forest and biodiversity in order to subsidize refined strategies on biodiversity use and conservation.

63. Gender will be treated as a crosscutting issue along the implementation of this IP. During the specific design stage of each project the gender theme will be carefully analyzed to identify the most suitable approach to be taken by each one of the four projects. The dialogue with stakeholders has been important to collect civil society views on how to promote gender equity and strengthen vulnerable groups in the approaches and strategies proposed in this Investment Plan. Compliance with the MDBs gender safeguards and any applicable Brazilian policy and regulation related to gender will be observed.

5. COLLABORATION AMONG MULTILATERAL DEVELOPMENT BANKS (MDBs) AND OTHER PARTNERS

64. MDBs and other bilateral and multilateral partners have collaborated with the Government of Brazil on issues related to forests and climate change. Besides the World Bank, the Inter-American Development Bank and the Global Environment Facility (GEF), Brazil has been supported by the governments of Norway, Germany, England, and non-governmental organizations like the World Wildlife Fund for Nature (WWF). This collaboration has occurred primarily with federal government entities responsible for the areas of environment, agriculture and science and technology, but also involves state governments. The main areas of collaboration are protected areas for biodiversity protection, environmental management, sustainable forest management, and sustainable agriculture. The Amazon biome has been the main beneficiary, but other biomes have also been supported.

65. Several of these operations have generated lessons that are considered in the design of the future projects supported by the Investment Plan and in the implementation of their corresponding activities.

66. Among the areas of collaboration, the creation, implementation and management of Protected Areas have received substantial support. The first stage of the Amazon Region Protected Areas Program (ARPA) assisted with funds of approximately USD 68.1 million the creation of protected areas, the consolidation of existing ones, and adoption of measures for the long-term sustainability of protected areas, protected areas monitoring, and coordination and project management. In its second stage, a USD 85.9 million program supports the expansion and consolidation of protected areas system in the Amazon, as well as the strengthening of its financial sustainability mechanisms.

67. Protected Areas in other biomes are also being supported. The Sustainable Cerrado Program supports with USD 42.69 million the conservation of the Cerrado biodiversity, the sustainable use of Cerrado natural resources, the institutional strengthening, public policy, and the coordination and monitoring of the biome.

68. The biodiversity of the Atlantic Forest biome has benefited from the collaboration, especially in the states of Espírito Santo, São Paulo and Rio Grande do Sul.

69. Biodiversity conservation has received collaboration not only by projects for specific biomes, but also in general for the entire country. The National Biodiversity Integration and Institutional Consolidation Project, for example, has a budget of USD 124 million to integrate biodiversity in regional governments and economic sectors, integrate biodiversity in the private sector, consolidate and strengthen institutions, and disseminate information on biodiversity for policy formulation. On the other hand, the project Improving Brazilian Capacity for the Conservation and Use of Biodiversity

through Management and Use of Information uses USD 8.99 million in the (i) consolidation of infrastructure, instruments, tools and technologies needed to describe, process and make available online and for free biodiversity information contained in the country's biological resources collections through the *Brazilian Biodiversity Information System (SIBBr)*; (ii) strengthening the institutional and taxonomic capacities to ensure continuous availability and updating of information in the SIBBr; and (iii) development of products and services that will enable key decision makers to establish policies that integrate the goals of biodiversity conservation and sustainable use in the operations of productive sectors.

70. The collaboration for the sustainable forest management has taken place in terms of improving public policies, promoting sustainable management and use, and supporting a more sustainable production of charcoal. The forest resources management is also being assisted by the project *Strengthening of the National Policy and Knowledge Systems in Support of Sustainable Management of Forest Resources in Brazil*. A donation of USD 9.9 million will facilitate the generation of information and the participation in natural resource management strategic decision making, with emphasis on land use change control to conserve biodiversity and carbon stocks. These activities will improve the forestry sector management and the knowledge of the stocks of CO₂ in forest biomass.

71. The promotion of sustainable use of the Amazon rainforest is being supported by the Sustainable Development Program of Acre. This USD 64.8 million loan seeks to improve the quality of the state inhabitants' life and the long term preservation of Acre's natural heritage. The program has three specific purposes: (i) modernize the state's environmental administration and ensure efficient use of natural resources; (ii) increase agriculture and forestry sectors growth rate and generate employment; and (iii) reduce transportation costs and increase access to rural electrification. The second stage of the program, a USD 72 million loan, has the goal of developing a set of new investment measures that contribute to further reduce deforestation and forest degradation.

72. The Integrated Development of Pará project invests USD 100 million to create conditions for the rural poor in Pará state to increase their income under a sustainable and secure environment. The financing of productive investment plans proposed and implemented by eligible producers associations enhances income generation and decreases pressure on forests.

73. The Support Program for Sustainable Development of the Forest Zone of Pernambuco (PROMATA) applies the resources of a USD 90 million loan to promote reforms designed to reduce deforestation and forest degradation, promote sustainable management, institutional strengthening, and contribute to biodiversity conservation, poverty alleviation, and improve rural population livelihoods. Another initiative, the Support Program for Sustainable Development of the State of Pernambuco loan of USD 32 million was used for purposes similar to those mentioned for the PROMATA.

74. The Sustainable Charcoal Production from Renewable Biomass project supports with USD 7.2 million the development and integration of cleaner technologies for the production of renewable charcoal from planted forests. This production reduces GHG emissions through technological improvements in the process of carbonization, the recovery of its derivatives, and the production of thermal energy.

75. The collaboration for sustainable agriculture that reduces deforestation pressure has been occurring in terms of technological development, environmental regularization of rural properties, and sustainable agriculture and rural development direct support. Embrapa is in the process of obtaining a USD 140 million loan whose specific objectives are to: (i) develop technologies for climate smart agriculture; (ii) incorporate climate sustainability practices to its organizational culture to improvement practices, processes and infrastructure; and (iii) increase the exchange with leading R&D overseas institutions in strategic areas to reduce GHG emissions.

76. Sustainable agriculture and rural development in specific areas has also been supported. The project Sustainable Management and Environmental Restoration in Degraded Areas in Rural of Tocantins applies a donation of USD 5.7 million to promote environmentally sustainable use of rural property and strengthen environmental conservation in the State of Tocantins through restoration of degraded areas and environmental protection of agricultural management.

77. The Technical Assistance Project for Rural Environmental Cadastre has implemented a grant of USD 3.5 million in the development of methodologies and experiments so as to promote environmental compliance of rural properties and help in the design and implementation of the CAR Project as part of the Investment Plan of Brazil for the FIP.

78. Last but not least, Brazil has received collaboration for strengthening environmental management. The *Development Policy Loan for Environmental Sustainability and Social Program*, for example, supported the use of USD 1.3 billion to (i) improve the effectiveness and efficiency of Brazilian environmental management system policies and guidelines, and (ii) further integrate the principles of environmentally sustainable development in the agenda of key sectors. The *Second National Environmental Project* provided USD 32.58 million in support to the enhancement of environmental sustainability in Brazil. The country also benefited from resources to develop training activities necessary to prepare three National Communications to the Conference of the Parties in accordance with CNUMC, especially for the calculation of emissions of GHGs in different sectors.

79. Building on these initiatives, and in line with national and sub-national strategies, the FIP program in Brazil has been developed in a multi stakeholder environment where various development partners have contributed and will continue to contribute in generating technical, financial and institutional capacities needed to develop and implement the activities contemplated in the Investment Plan. The MDBs, bilateral development agencies, partner governments and other partners will be coordinated so as to enhance synergies and ensure the continuity of the demonstrated collaboration.

6. IDENTIFICATION AND RATIONALE FOR PROGRAMS AND PROJECTS TO BE CO-FINANCED BY FIP

80. The Brazil Investment Plan will seek to promote sustainable land use in the Cerrado biome, including degraded or underutilized lands, and the improvement of forest and land use management, with a view to reducing pressure on the remaining forests, and helping to reduce GHG emissions and increase CO₂ sequestration.

81. The IP proposes to support the implementation of important national plans and programs with actions targeted at the reduction of deforestation and lessening the pressure for deforestation in Brazil's second largest biome. While the Amazon biome retains around 80% of its original cover, approximately 48% of the Cerrado has been converted over the past 50 years. The Government of Brazil is aware of this challenge and has begun to replicate in the Cerrado the programs and plans that it has already applied in the Amazon, adapting them as necessary to the environmental and socioeconomic conditions of the Cerrado region. The substantial progress made by the government to reduce has created a basis for securing similar achievements in other biomes, especially in the Cerrado, given its importance to agriculture, the size of the territory and its rich biodiversity.

82. The transformational goal of the FIP in Brazil is to support, through financing specific projects, strategies and wider national initiatives targeted at the reduction of GHG emissions, an increase in forest carbon uptake and conservation of biodiversity.

83. The logic framework and the results shown at **Table 4** set out the structure of specific interventions regarding the transformational purpose, the general objectives of the Investment Plan and the three above-mentioned action areas.

84. The Investment Plan projects focus on two thematic areas:

1. **Management and use of previously anthropized areas** consists of two projects with substantial synergy between them: (i) environmental regularization of rural lands (based upon the CAR), which aims to support the implementation of the environmental compliance system based upon the CAR in the 11 states within the Cerrado biome; and (ii) sustainable production in areas previously converted to agricultural use (based upon the ABC Plan) targeted at upgrading the actions taken initially under the ABC plan, in order to ensure that landholders improve their production practices and systems in previously anthropized areas or in those suffering degradation. These projects will be implemented in a collaborative fashion, given

that environmental compliance is a pre-requisite for participation in the ABC plan. One key advantage is that CAR registration ensures that the producers are able to access official support for restoring their APP's and RL's.

Table 4 – Brazil Investment Plan: Logic Framework

Transformational aim (of the country)			
To contribute to a broader set of efforts to reduce GHG emissions arising from deforestation and forest degradation; to increase carbon sequestration in the biomass (above and below ground) and soils in the Cerrado; to conserve biodiversity and to reduce poverty			
Components			
Implementation of the rural environmental regularization system (which includes CAR) in the 11 states of the Cerrado	Dissemination of the ABC Plan and capacity building for rural producers	Implementation of the National Forest Inventory (NFI) in the Cerrado biome.	Implementation of a system for monitoring vegetation cover
Registration of rural landholdings in priority municipalities	Support to providers of services and inputs	Consolidation of the National Forest Information System (NFIS)	Implementation of an early-warning system for the prevention of forest fires
Implementation and management of Projects			
Implementation and management of the Brazil Investment Plan			
Target areas			
Regularization of rural private land in environmental terms	Adoption of good practices of sustainable agricultural on a large scale in the Cerrado	Generation and dissemination of good quality and accurate information about forest resources and their use	Monitoring of the vegetation cover of the Cerrado
Protection of Areas of Permanent Preservation (APPs) and Legal Reserves (RLs)	Recovery of degraded or underused anthropized areas for production or for conservation.	Consolidation of the National Forest Information System as the main platform for the analysis, dissemination of information and management of knowledge regarding the Cerrado forest resources	Early-warning system for the prevention of forest fires
Restoration of degraded Areas of Permanent Preservation (APPs) and Legal Reserves			

- 2. Generation and management of forest information** consists of two projects with complementary approaches (forests and land use): (i) generation and promotion of new, updated and accurate information on forest resources and their use, with a view to assisting public and private sector policymakers and enabling the environment for good forest management practices, that may contribute to valorizing forest resources as an important socioeconomic and environmental asset; and (ii) generating information on deforestation in a systematic and continuous way, forest degradation, land use, as well as developing an early-warning system for preventing forest fires and a system for monitoring the vegetation cover.

85. **Figure 8** below sets out in simplified form the context, challenges and intervention strategy of the Brazil Investment Plan.

Figure 8 – Brazil Investment Plan: Context, Challenges and Intervention Strategy

CERRADO – CONTEXT			
<p><u>Ecological</u></p> <ul style="list-style-type: none"> • Significant carbon stocks (C), especially below ground • Substantial structural variation of native vegetation • High level of biological diversity • Important for the conservation of water resources • Susceptibility to forest fires 	<p><u>Land occupation and use</u></p> <ul style="list-style-type: none"> • Approximately 50% of the area has been anthropized • Old human occupation in the southern part and occupation fronts in the north and northeast • Main land use: ranching • Annual crops grown intensively • Predominance of large farms 	<p><u>Social and economic</u></p> <ul style="list-style-type: none"> • Of great importance for the Brazilian economy (GDP agriculture) • Intraregional inequalities • Social diversity • Culture predominantly based on agriculture and cattle raising 	<p><u>Political and institutional</u></p> <ul style="list-style-type: none"> • Environmental law defines the legal reserve of 20- 35% of rural properties • Land belonging mainly to the private sector • Distributed over 11 states and 4 geopolitical regions (N, NE, Center- West and SE)
CHALLENGES			
<ul style="list-style-type: none"> • Lack of systematic information about natural resources and forest carbon stocks • Allocation of carbon stocks –Post conversion management plays a determining role in carbon emissions 	<ul style="list-style-type: none"> • Lack of an appropriate system for monitoring land use and coverage • Low efficiency in the use of previously open grassland • Low environmental sustainability of the current agricultural model 	<ul style="list-style-type: none"> • Integration of production and conservation • Increased training in more sustainable production methods in different areas and with different social groups 	<ul style="list-style-type: none"> • Increased availability of alternatives for minimizing deforestation • Establishment of a grassland conservation strategy especially focused on private farms
INTERVENTION STRATEGY			
Management and Use of already anthropized areas		Generation and Management of Forest Information	
Improvement on access by producers to resources on offer for Low Carbon Emission Agriculture Implementation of the Rural Environmental Cadastre in the entire biome		Generation and availability of spatially and temporally consistent environmental information = forest inventory, remote sensing monitoring and early warning system for forest fires	
Project 1.1- Environmental regularization of rural lands (based upon the CAR)	Project 1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan)	Project 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources	Project 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover.

86. A description of the overall objective and components of the four projects and the contributions that each project can make towards a more substantial transformational effort is presented below.

THEME 1 – Management and Use of previously anthropized areas

87. The goal of this thematic area is to promote sustainable use on privately run farms. Better land use will result in reduced emissions and improved carbon sequestration, and ease pressures for deforestation on the remaining forests. The main instrument used by the Government of Brazil for this purpose is the ABC Plan. This offers especially tailored credit lines to farmers who are prepared to adopt good agronomic practices to increase systemic resilience, productivity and efficiency in 7 different programs²⁹, also contributing to the reduction of GHG emissions. This financial support is needed to cover farmers' initial costs involved in changing inputs, replacing machines etc. The challenge is to improve the access by producers to credit on offer, by tackling issues such as: (i) farmers uninformed about the Plan; (ii) financial agents unaware of being able to offer the credit lines of the ABC Plan to their clients; (iii) lack of technical assistance services to help farmers to undertake projects using the practices recommended by ABC; and (iv) failure to comply with environmental legislation, mainly concerning RLs and APPs, without which credit cannot be awarded.

88. This thematic area aims to contribute to solving this challenge through two projects that complement and generate important synergies for achieving the objectives of the Investment Plan: **Project 1.1- Environmental regularization of rural lands (based upon the CAR)** and **Project 1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan)**. Project 1.1 regularizes the environmental aspects of rural properties, enabling farmers to access the support provided by the second project. This focuses on providing funding to producers to enable them to adopt sustainable land use technologies. In the absence of regularization, the Brazilian financial system does not fund investment projects for agricultural and traditional livestock production, nor for the introduction of the more sustainable technologies promoted under the ABC Plan. By financing these technologies and taking action to restore Legal Reserves and Areas of Permanent Preservation, the ABC Plan, leveraged by Project 1.2, promotes not only a substantial improvement in the sustainability of land use, but also encourages farmers to fulfill their commitments to the environmental authorities. Throughout the entire biome, deployment of the Rural Environmental Cadastre applies free of charge to smallholders by the government, enabling them to comply more readily with environmental legislation, and therefore making it possible for them to access financing resources such as the National Program to Strengthen Family Agriculture (PRONAF) and the ABC Plan. Furthermore, the ABC Plan assists with the recovery of APP's and RL in these properties whenever necessary.

89. The **overall objective of the Project 1.1- Environmental regularization of rural lands (based upon the CAR)** is to help reduce deforestation and forest degradation on rural landholdings and to reduce emissions and to increase carbon sequestration by ensuring the environmental compliance by owner or occupiers of private landholdings in the 11 states within the Cerrado biome.

90. The project has **four components**:

- a. **Implementation of the rural environmental regularization system (which includes CAR) in the 11 states of the Cerrado** – to include the provision of technical, legal and financial assistance to inform the elaboration of normative, institutional, operational and other necessary frameworks as necessary; as well as support to purchase equipment and materials; and to train stakeholders. Estimated FIP funds: USD 14 million.
- b. **Registration of rural landholdings in priority municipalities** – to support the registration of rural properties, initially in priority municipalities containing a high percentage of degraded or deforested APPs and RLs, with priority micro-watershed basins or undergoing rapid deforestation. Estimated FIP funds: USD 12 million.
- c. **Implementation and management of the Project** – to support activities related to the management and implementation of the Project. A project Director will be responsible for overall project implementation. The project will produce guidelines and manuals and promote meetings and workshops to build capacity at Federal, State and Municipal level

²⁹ No-tillage technique, recovery of degraded pasture land, crop-livestock-forest, commercial planted forests, biological nitrogen fixation and treatment of animal waste.

to implement the CAR. Additionally a communication plan will be developed as an outreach strategy to inform and involve stakeholders (municipalities, producer's and their representative entities, NGOs, others) in the project. MMA will be the main responsible to supervise technical and financial aspects of the project, and monitor project indicators. Estimated FIP funds: USD 6.5 million.

- d. **Implementation and management of the Brazil Investment Plan** – to enable the functioning of the Plan Management Unit to support activities of management, monitoring and evaluation and outreach of the Brazil Investment Plan with a view to strengthen the coordination and synergies amongst projects throughout the execution phase. Estimated FIP funds: USD 1.0 million.

91. The **contribution of the project to a transformational impact** is that the CAR system would be available to serve the entire country. The system to be developed and then deployed in the 11 states will be field-tested and ready to be deployed in the other 15 states and Federal District creating a **true** national CAR.

92. **Another contribution to a transformational impact derives** from the synergies that will be generated between the ABC Plan and the *Mais Ambiente* Program which comprises the CAR. This arrangement will enable the Project to better monitor compliance with environmental legislation and generate appropriate conditions for enabling landholders to access financial and technical resources of ABC Plan and other sources of targeted funds, to use land in a more sustainable way and protect the environment. The implementation of CAR in the Cerrado Biome will make it possible to all institutions involved in this process to acquire knowhow on CAR implementation. Besides, the project will allow the establishment of CAR that will continue after the project lifetime.

93. The **project focuses on** the 11 states covered by the Cerrado biome, the priority municipalities that have high rates of deforestation located in this biome and other municipalities where extensive degraded or underutilized areas continue to exist.

94. The **overall objective of the Project 1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan)** is to help reduce deforestation and degradation of forest on rural landholdings, reduce emissions and increase carbon sequestration in private landholdings. The project, together with a wider set of initiatives and resources, seeks to contribute to the success of the broader adoption of the ABC Plan by the private sector.

95. The project has **four components**:

- a. **Dissemination of the ABC Plan and capacity building for rural producers** – to undertake campaigns, training courses, technical events for publicizing the ABC Plan, its modus operandi, requirements and procedures (including those related to rural land environmental registration), recommendations for accessing credit and the new technologies, and business models designed to increase the number of farmers interested in the benefits offered by the ABC Plan by adopting the recommended technologies. The component also targets financial agents, farmers' associations and suppliers of agriculture-related technical services. Estimated FIP funds: USD 7.15 million.
- b. **Support to providers of services and inputs** – to train professionals, technical staff and other practitioners involved in agricultural production in the techniques eligible under the ABC Plan, and in the operational aspects of the plan. Training will also be provided on environmental regularization of rural landholdings, including the benefits of adhering to the Rural Environmental Cadastre (CAR). Other activities include establishing a critical mass necessary for leveraging adoption of the required technologies, as well as to foster the creation of facilities for producing seedlings (both native and exotic), with a view to implementing agro forestry systems useful for restoring Areas of Permanent Preservation and Legal Reserves. The component will also support the establishment of technical reference units for training professionals, technical staff and producers. This could also involve improving the recommended technologies and undertaking studies, for example, to streamline the economic, financial and operational elements of the plan from the social and producer standpoints. Estimated FIP funds: USD 23.97 million.

- c. **Increase in access to credit** – to upgrade or establish appropriate mechanisms, protocols, procedures and instruments to facilitate farmers’ access to the ABC credit line. This component will also provide training sessions for bank staff and professionals to learn about the ABC Plan and the abovementioned instruments, improving their ability to offer ABC credit to the potential clients. Estimated FIP funds: USD 2 million.
- d. **Implementation and management of the Project** – to support activities related to the management and implementation of the Project. A project Director will be responsible for overall project implementation. MAPA will be the main responsible to supervise technical and financial aspects of the project, and monitor project indicators. Estimated FIP funds: USD 2.6 million.

96. **The main contribution of the project to transformational effect** arises from the synergies that will be generated between the ABC Plan and the *Mais Ambiente* program, through which Project 1.1 Environmental Regularization of Rural Lands (based upon the CAR) will generate the conditions for landowners to access the technical and financial support provided under the ABC Plan and from other sources, which will enable them to use land in a more sustainable manner as well as protect the environment. **As a result**, the consolidation of a low carbon emission economy in the agricultural sector will improve the efficient use of natural resources and encourage producers and rural communities to play a positive role in deforestation reduction.

97. **Another contribution of the project to a transformational impact** is that the training and dissemination materials and tools successfully deployed in the Cerrado will be used by the MAPA to promote broader access to the ABC Plan in all other regions of Brazil. Thus, it will contribute to expand the adoption of low carbon agriculture in Brazil.

98. The **project focuses on** the Cerrado region, given its high agricultural potential and the need to conserve its natural areas. The region is also at an advanced stage of anthropization. The technology recommended by the ABC Plan will intensify sustainable land use and reduce greenhouse gas emissions, reducing pressure for deforestation of new native forest areas and converting them for agricultural use.

THEME 2 – Generation and Management of Forest Information

99. The purpose of the second thematic area is to improve forest management. This will primarily involve generating, analyzing and distributing timely and good quality information on the forest resources and their use, supporting public and private decision-makers with a view to valorizing the forest and providing investment for GHG mitigation projects. A key goal is to obtain primary information on the quantities, qualities and location of forest resources, land use changes, carbon density both above and below ground and the risks of forest fires. The aim is also to streamline the management and planning of land use, thereby contributing to reduction in GHG emissions, increase in carbon uptake, improvement of conservation actions, protection of biodiversity, and reduction in pressures on the remaining forests. Such initiatives will be essential for measuring the progress of the interventions by Brazilian society in its effort to deal with climate change.

100. The thematic area consists of two projects with complementary targets (forests and land use): **Project 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization forest resources**, aims at producing and disseminating accurate and updated information and data on forest resources and their use; and **Project 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover** aims at the systematic and continuous generation of information on deforestation, forest degradation, land use, and the development of early-warning system for preventing forest fires. Accurate, up-to-date, high-quality information should also contribute to enabling the environment for adoption of forest practices that valorize the forest resources from both an environmental and economic/social standpoint. The projects should contribute therefore to supporting management of plans, programs and national actions focused on issues such as combating deforestation, mitigating climate change and conserving biodiversity. The information generated (and made publicly available), by systematic surveys of vegetation cover based on the creation of a

standardized forest inventory and remote sensing monitoring, will be key for supporting management of lands occupied by indigenous peoples and traditional communities engaged in extractive activities.

101. The **overall objective of the Project 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization forest resources** is to implement the NFI in the Cerrado biome and to consolidate the NFIS as key policy instruments that will produce timely, good quality information for decision-makers of the public and private sectors on forest resources and their use, thereby contributing to sustainable programs focused on the mitigation of GHG emissions in the Cerrado.

102. The project has **three components**:

- a. **Implementation of the National Forest Inventory in the Cerrado Biome** – to include the collection and assembling of biophysical and socio-environmental data in approximately 5,000 sample points in the territory, to carry out analyses of landscape samples for the study of forest fragmentation and land use, as well as to combine the use of this dataset with vegetation mapping to produce regional-wide results. At the conclusion of the project, decision-makers and society in general will have at their disposal accurate estimates capable of dispelling ignorance about many issues: e.g. the area of forest cover, forest degradation, forest regeneration, at-risk species or those threatened by extinction, estimates of increasing carbon stocks (volume and biomass) and soil carbon, both above and below ground, diversity of forest tree species, forest management, forest dynamics, health and vitality, characteristics of soils under the forest, forest fragmentation, the proportion of different land uses, trees growing outside the forest, local use of forest products and services by rural populations (traditional or not) and their perception of the importance of these resources. Estimated FIP funds: USD 15.5 million.
- b. **Consolidation of the National Forest Information System** as the main platform for the analysis, dissemination of information and knowledge management of forest resources in the Cerrado and their potential use for promoting actions and activities leading to climate change mitigation, in addition to up scaling the system to embrace issues of national interest (forest resources, decentralized forest management at state level, forest production, teaching and research etc). The Information System will serve as a management and reference tool for society as a whole. This project will also develop and establish modules that also encourage trade of forest products in the Cerrado, by fostering production chains of timber and non-timber forest products, as well as measuring and adding value to environmental services in this biome. At the conclusion of the project, decision makers and society as a whole will have at their disposal a unique information platform fed by a number of different institutions, allowing easy access (appropriately formatted for different users) to scales (biomes, states, municipalities, hydrographic basins etc) and applications. The NFIS will also make available information produced by other projects such as: environmental regularization of rural lands (based upon the CAR), sustainable production in areas previously converted to agricultural use (based upon the ABC Plan), and the implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover. Furthermore, the data produced by the NFI and disseminated by the NFIS will be used to inform the Brazilian national communications and to provide information for the design, management and evaluation of national forest-related policies. Estimated FIP funds: USD 1.15 million.
- c. **Implementation and management of the Project** – to support the Project implementation, as well as to establish a monitoring system based on indicators that will allow following up and controlling expected results *vis-à-vis* the project schedule. It includes a basic team to manage administrative processes of buying goods and services, according to BID procedures and standards, and promoting annual meetings with external participants. It will be part of the existing NFI PMU (Project Management Unit) already established to support the NFI GEF project. Estimated FIP funds: USD 0.7 million.

103. **The contribution of the project to a transformational impact.** Based on knowledge of forest resources this project contributes to transform the current paradigms and to establish a culture in which forest resources are valued as an important environmental and socio-economic asset. It fosters rural development standards based on forest maintenance and promotes sustainable practices with climate benefits.

104. **The project focuses on** the Cerrado biome.

105. **The overall objective of the Project 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover** is to contribute to the maintenance and enhancement of forest carbon stocks by producing geospatial and temporal information about deforestation, forest degradation and land use in the Cerrado, Caatinga and Pantanal biomes; and to the development of an early-warning system to prevent forest fires at national scale which will serve to inform and improve government efforts to reduce deforestation and degradation of the native vegetation cover. As such, the early-warning system and the monitoring system/platform must be designed by a joint effort of various institutions, with a multisensory and multiscale approach for various objectives and many institutions. Both systems will function as a command and control instrument but also generating information to guide land use planning and management.

106. The project has **three components**:

- a. **Implementation of an early-warning system for the prevention of forest fires** – to revise methods and develop suitable protocols for producing and disseminating information that can guide fire prevention and fighting activities. Information about the alarm system needs to be associated with training rural managers and landholders so that they can evaluate the risks (and losses) involved in using fire as a routine agricultural tool. Dissemination and training in the use of information related to fire alert systems will also help (i) to develop innovative instruments for reducing the risks of fire damage such as introducing forest insurance against fires, systems of regional rural prevention services for combating fires and training for landowners; and (ii) to improve legislation and administrative processes for regulating the use of prescribed burnings and for attributing civil and criminal responsibility to landholders for fires caused by negligence, bad faith etc. Estimated FIP funds: USD 6 million.
- b. **Implementation of a system for monitoring the vegetation cover** – to revise current methods and develop suitable protocols to monitor vegetation cover and land use in the Cerrado, Caatinga and Pantanal biomes. To apply the methods thus developed, to periodically measure the changes in vegetation coverage and land use, and to analyze and promote dissemination of the results for the information of stakeholders. The Investment Plan is focused on the Cerrado, but the monitoring project will be a joint exercise in all 3 biomes owing to the structural similarities and major transition areas common to all of them. Estimated FIP funds: USD 9 million.
- c. **Implementation and management of the Project** – to support activities related to the management and implementation of the Project. A project Director will be responsible for overall project implementation. MCTI will be the main responsible to supervise technical and financial aspects of the project, and monitor project indicators. Estimated FIP funds: USD 0.65 million.

107. **The contribution to a transformational impact** derives from a) the availability of timely official good quality information linked to the forest inventory and which helps to measure deforestation, forest degradation while enabling GHG emissions from these processes in the Cerrado, Caatinga and Pantanal biomes to be properly calculated; and b) the development of an early warning fire prevention alarm system for providing innovative public and private services and instruments to reduce forest fires and the damage caused by fires to communities, the environment and economic activities. The development of these systems will be based on a consortium of different institutions that will bring the multidisciplinary expertise needed for the implementation phase.

108. **The project focuses on** the Cerrado, Caatinga and Pantanal biomes, producing information by monitoring vegetation cover and land use similar to that already produced for the Amazon forest. In

the case of the forest fire early-warning system, the focus of the project will be on a national scale, concentrating mainly on the three above-mentioned biomes and on the Amazon, given that these are the regions where forest fires are most frequent.

7. SYNERGIES

109. The geographical size and environmental complexity of Brazil and the need for, *inter alia*, ensuring the consistency of the various instruments employed, coordinating efforts in the regions and sharing timely and relevant information are all challenges that call for building of synergies between the various actors and activities with a view to securing cost-effective solutions.

110. As a response to these challenges, the Brazil Investment Plan proposes a coordinated and synergic action of different actors in order to improve the sustainability and efficiency of forest resource management and land use in the Cerrado, in particular on the privately-run farms, which are prominent in this biome. Increasing the information and data coverage to the Cerrado is essential for prioritizing the activities enshrined in the CAR and ABC Plan, as well for improving other programs and actions targeted at conservation of the Cerrado.

111. It is important to highlight that, since the beginning of the design phase, the successful collaboration between the three Ministries (MMA, MAPA and MCTI) has allowed the development of a strategic approach capable to foster synergies not only among Brazil Investment plan and its projects, but also with ongoing Cerrado government plans and policies already in implementation at federal, state and municipal levels as represented in **Figure 9**.

112. The Sustainable Cerrado Program addresses global environmental biodiversity protection priorities through a framework for the planning, financing, implementation and evaluation of four decentralized projects, together with an integrated, biome-wide, coordination. Each project contributes to: (i) conservation of the Cerrado biodiversity, (ii) sustainable use of the Cerrado natural resources, (iii) Institutional strengthening and formulation of public policies related to the conservation and sustainable use of the Cerrado natural resources, and, (iv) coordination and monitoring.

113. As part of Sustainable Cerrado Program and with funds from GEF, through the World Bank, a project (hereafter called GEF Cerrado) with four subprojects was established focusing on the conservation of the biome. The GEF Cerrado objective is to enhance biodiversity conservation, and improve the environmental and natural resource management of the Cerrado by local communities in Brazil's territory, through appropriate policies and practices. This will be achieved through creation, implementation and strengthening of protected areas, enhancement of social participation in protected area (PA) management, and promotion of sustainable use practices.

114. The FIP project will act complementarily to GEF Cerrado, by focusing its action to improve land use practices in PA neighboring areas, therefore preventing negative effects to PA. The Ministry of Environment (MMA), the Chico Mendes Institute for Biodiversity Conservation (ICMBio) and the governments of Goiás and Tocantins, (which must implement the goals and guidelines recommended by the Sustainable Cerrado Initiative) developed the subprojects. In its first phase, the GEF has awarded USD 13 million to this project. The Brazilian partners have committed USD39.5 million in counterpart funds.

115. The Plan to Prevent and Control Deforestation and Fires in the Cerrado – PPCerrado was launched by Ministry of Environment in September 2009 aiming to reduce deforestation, conserve biodiversity and promote sustainable development of Cerrado. The PPCerrado is one of the main pillars of the ongoing strategy to reduce emissions from deforestation and forest degradation under development in Brazil. The PPCerrado is also part of the National Policy on Climate Change and thus centralizes the strategies for the biome to achieve the 40% reduction on deforestation presented as nationally appropriated mitigation action by Brazil to the UNFCCC, under the Copenhagen Accord. It has been expanded to embrace sectoral initiatives, such as the ABC Plan. The ABC Plan, as well as the PPCerrado, is an integrated part of the National Policy on Climate Change and thus centralizes the strategies for the emissions reductions at the agriculture sector.

116. The Investment Plan will act in a synergetic way, contributing to the achievement of the

objectives of both PPCerrado and the ABC Plan, coordinating efforts and activities of the various executors and their working relationships with other government entities involved. In addition to addressing the different aspects of interagency coordination, the Plan will also contribute to resolving operational, regulatory and management challenges.

117. It is also important to highlight the synergies between the projects of the Investment Plan.

118. Concerning the information on natural resources and forest stocks, the Project 1.1 (CAR) will supply all other projects with complementary information. By assuring environmental compliance in the rural properties registration process, the CAR Project will enable producers to access resources from the ABC credit lines. Therefore, the areas targeted by the CAR project will also be a focus of the Project 1.2 (ABC) and vice versa, given the high demand for the benefits of the ABC. The ABC program credit lines also support the recovery of APP and RL degraded areas, which will be quantified by CAR. A possible sub product of CAR satellite images is the mapping of land use, contributing to more accurate carbon stock estimate and degraded pastureland detection. The ABC Program also finances the productive recovery of these areas.

119. Project 2.1 (NFI and NFIS) qualifies the information about forest remaining areas mapped by CAR by supplying data about its density and diversity. Those two projects combine efforts to allow more accurate carbon stock estimates. Another additional benefit is the identification of surrounding areas to be used as ecologic steppingstones, in the sense of those areas to be used for seed collection to produce nursery plants for recovery of degraded areas, and to guide the establishment of ecologic corridors. The NFI will allow the identification of land custody or high biodiversity spots.

120. Another synergy will come with the combination of the forest information and monitoring system to be developed by projects 2.1 (NFI and NFIS), 2.2 (Monitoring and Fire Prevention Systems) and 1.1 (CAR). The monitoring and accountability chain of deforestation and illegal fires will have a powerful instrument when CAR and satellites detection systems are combined together. The settlers will have documented their piece of land so that when fire spots or deforestation are detected, forest policymakers will have a quick definition of the responsible, just by simple information combination.

121. Finally, by contributing to preventing fires and promoting natural regeneration in the Cerrado areas, the warning system proposed in project 2.2 will lead to a reduced risk of losing natural areas as well as minimizing economic losses for Cerrado farmers, therefore contributing with ABC project 1.2.

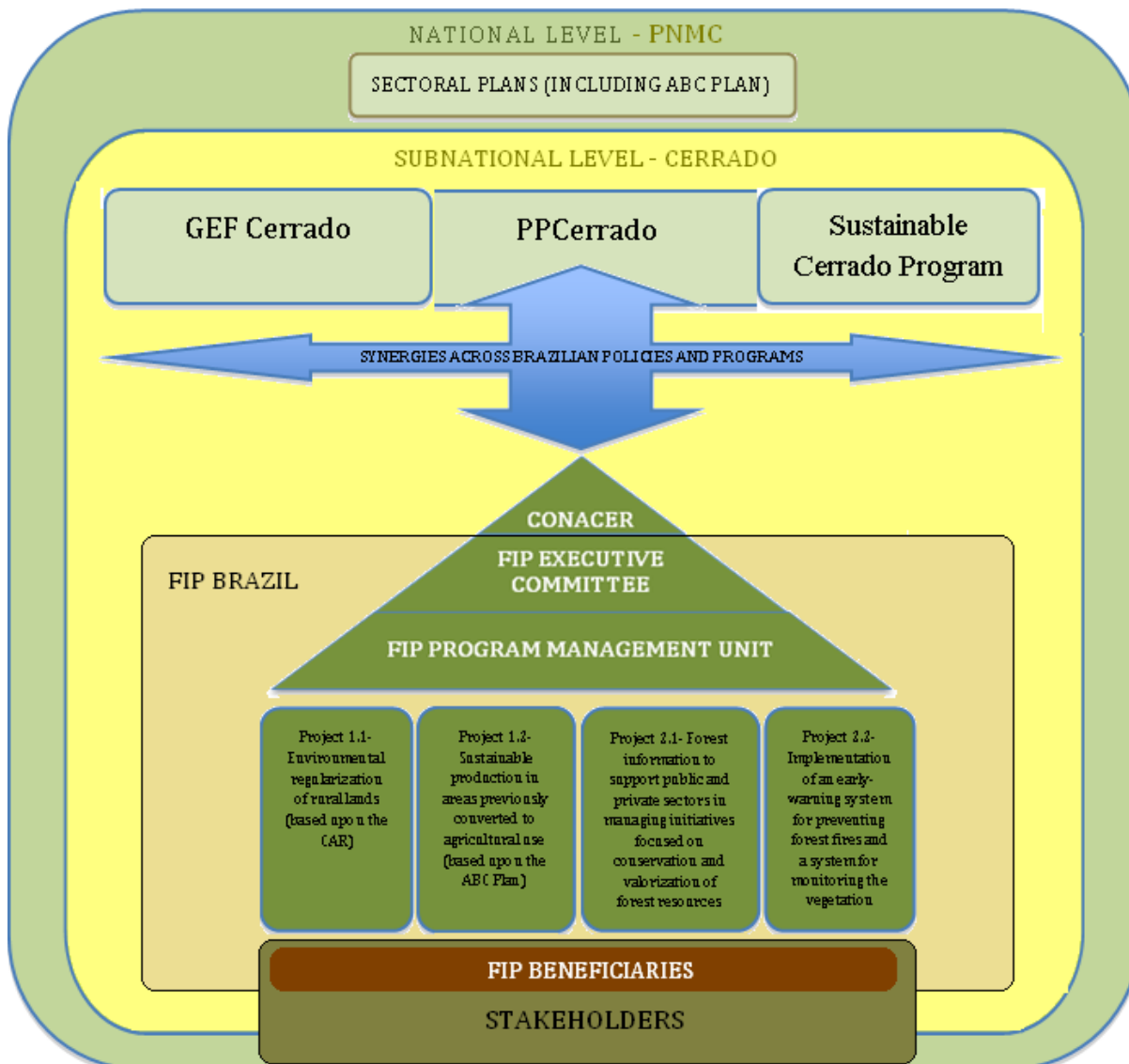
8. TRANSFORMATIONAL IMPACT

122. **The transformational impact derives** mainly from two factors: a) the synergies established among the four project leading institutions (MMA, MAPA, MCTI and SFB); b) the implementation of the four projects and the achievement of the expected results will establish enabling conditions to overtake existing bottlenecks preventing the sustainable development of the Cerrado biome.

123. The CAR system implementation experience in the 11 states will be field-tested and ready to be deployed in the other 15 states and Federal District. The implementation of CAR in the Cerrado Biome will enable all institutions involved in this process to acquire knowhow on CAR implementation. Besides, the project will allow the establishment of a CAR system that will continue after the project lifetime.

124. The synergies between the ABC Plan and the *Mais Ambiente* program will generate the conditions for landowners to access the technical and financial support provided under the ABC Plan and from other sources, which will enable them to use land in a more sustainable manner as well as protect the environment. As a result, the consolidation of a low carbon emission economy in the agricultural sector will improve the efficient use of natural resources and encourage producers and rural communities to play a positive role in deforestation reduction. The lessons learned, training and dissemination materials and tools successfully deployed in the Cerrado will be used by the MAPA to promote broader access to the ABC Plan in all other regions of Brazil, contributing to expand the adoption of low carbon agriculture in Brazil.

Figure 9 – Brazil Investment Plan: Institutional Arrangement and Synergies



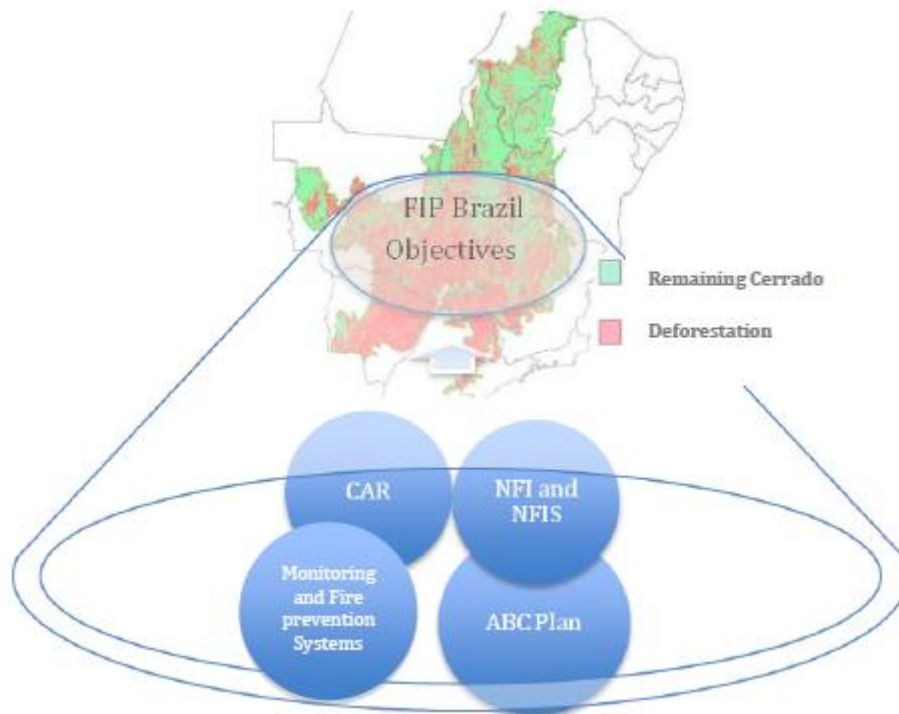
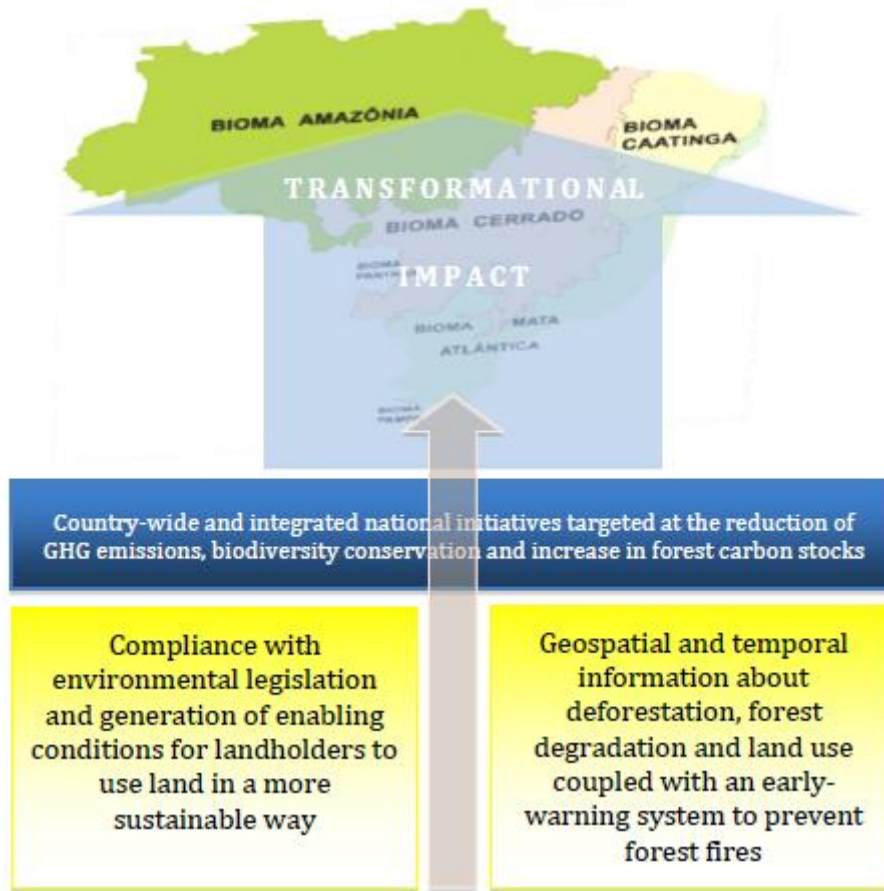
125. The enhanced knowledge on forest resources will foster rural development standards based on forest maintenance, and promote sustainable practices with climate benefits. The information provided by the NFI and NFIS will help the monitoring system to measure deforestation, forest degradation and enable GHG emissions in the Cerrado be properly calculated. The early warning fire prevention alarm system will provide innovative public and private services and instruments that will contribute to the reduction of forest fires and the damage caused by fires to communities, the environment and economic activities. The development of these systems will be based on a consortium of different institutions that will bring the multidisciplinary expertise needed for the implementation phase.

126. **Figure 10** represents the transformational impact to be generated by the Brazil Investment Plan implementation.

9. IMPLEMENTATION ARRANGEMENTS

127. The Brazil Investment Plan has developed a management arrangement capable of assuring that the synergies between the different institutions will not be lost during the implementation phase. Furthermore a monitoring and evaluation plan will be developed to measure the achievement of the expected results.

Figure 10 – Brazil Investment Plan: Transformational Impact



128. 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. The CONACER is composed of representatives from: (i) MMA; (ii) ICMBio; (iii) Ministry of Agrarian Development (MDA); (iv) Embrapa; (v) Brazilian Society for the Progress of Science (SBPC); (vi) Brazilian Association of State Environmental Entities (ABEMA); (vii) civil society organizations (including representatives of network NGOs of indigenous and local communities); and, (viii) the rural productive sector. The Commission may invite other institutions during project execution as necessary.

129. Given the role and wide representation of interested stakeholders relevant to the Brazil Investment plan, CONACER should act as the consultative committee for the Investment Plan. It will monitor and review Brazil Investment plan progress and results and will advise the Brazil Investment Plan Executive Committee on how to improve execution.

130. The Brazil Investment Plan Executive Committee (EC) will be responsible for the implementation of the Investment Plan through the coordination of the actions of the different ministries involved and the interaction of FIP projects with other governmental programs. The EC should stimulate synergies between FIP projects and the involvement of different stakeholders. The EC will have representatives from MMA, MAPA, and MCTI. A senior staff member of the Government executing agencies will be appointed as Project Director for each one of the four FIP projects. Each Project Director will be responsible at the highest level for ensuring that the project implementation follows national policy and standards, and contributes to the objectives of the Investment Plan. The EC will report periodically to the CONACER about the IP progress and results and will also receive feedbacks and guidance to the improvement of the IP execution.

131. The Plan Management Unit (PMU) will support the EC and will be formally established through an administrative ruling. PMU will be responsible for the overall implementation of the Brazil Investment plan and its projects, including operational planning, supervision, administrative and financial management and the adaptive management of the Plan based on inputs from the M&E plan (see next section). The PMU will be responsible for overseeing the day-to-day implementation of Plan activities. In summary the PMU will have responsibility for, among others: (i) managing the Plan; (ii) coordinating the management of financial resources and procurement; (iii) reporting on the application of resources and results achieved; (iv) preparing management reports; (v) promoting inter-institutional linkages; (vi) monitoring and evaluation; and (vii) outreach and disseminating program information and results.

Monitoring, Evaluation and Communication

132. Plan monitoring and evaluation will be conducted in accordance with established FIP rules and procedures. The expected results from implementation of the Brazil Investment Plan (Table 7) and the M&E indicators with their corresponding means of verification will form the basis upon which the plan's Monitoring and Evaluation system will be built.

133. It is envisaged that two independent external evaluations will be undertaken. One evaluation at mid-term would measure progress being made and identify strengths and weaknesses aiming at reinforcing positive aspects and making adjustments as needed. The final evaluation would assess, among other issues, the achievement of outcomes, sustainability of results and identify lessons learned.

134. The dissemination of progress and results would follow a communication plan to be developed at the beginning of projects implementation. This plan should include a website, periodic reports and outreach activities.

Summary of financial management arrangements.

135. Each one of the Brazil Investment Plan projects will have its own financial management arrangements, as defined with the respective MDBs. Yet it is expected that the PMU consolidate the information into a single report, using inputs provided by each project.

136. In Brazil, when the recipient is a federal organization, the independent external audit is performed by the SFC-Federal Secretariat for Internal Control of the Federal Office of the Comptroller

General. This is identified in each grant or loan agreement and is at no cost for the project.

10. IMPLEMENTATION POTENTIAL WITH RISK ASSESSMENT

Capacity of the Executing Agencies

137. The Investment Plan project-executing agents possess good skills and expertise. All have already executed or are in the process of executing projects financed by MDBs and have experience in the design, analysis and execution of projects involving resources from different international sources as well as, naturally, projects financed by the Brazilian national budget.

138. All agencies involved in the execution of the Investment Plan projects have a mandate and experience in the areas of their respective projects. However, while they currently have well-qualified technical and support staff, it might be necessary to expand staffing levels if such a need is identified at the design and analysis stage of each project.

139. Most activities planned under the Investment Plan are being executed or have been undertaken in other regions or under different circumstances. The lessons learned from previous experiences are likely to benefit the new projects, rendering them more efficient and effective and more likely to achieve the desired results. During the preparation and analysis of each project, these lessons will be carefully identified and incorporated to the project design.

140. All Investment Plan projects reserve funds for improving procedures, methods and protocols, and for expanding staff levels to the minimum required in order to ensure that staff has sufficient capacity to undertake projects in accordance with the requirements and procedures of MDBs and Brazilian law, including project performance monitoring and evaluation both during and after implementation.

141. Projects also anticipate the need for closer collaboration between the executing agents of individual projects and, in certain circumstances, between them and states/municipalities, financial institutions and agricultural producer associations. This will ensure that the benefits of synergy foreshadowed in the Investment Plan are quickly achieved. It is of vital importance to improve liaison in this way since cross-project inputs to boost inter-dependent activities are essential in order to realize the benefits of GHG emission mitigation or CO₂ sequestration (**Figure 8**).

142. In both the public and private sectors in Brazil, compliance with national legislation on environmental and social safeguards is an integral part of project preparation, approval and implementation. The country's knowledge and previous experience of meeting MDB safeguard requirements will be a significant advantage at the project preparation stage and will help to avoid safeguard-related problems during project implementation.

Identification of possible risks

143. The prospect of the Investment Plan successfully achieving the aims of Program 1 (**Management and Use of previously anthropized areas**) partly depends on the voluntary adoption by farmers of the various technologies being promoted and subsidized offering distinctive advantages in terms of financial returns and lower risks. The competitiveness of a particular technology depends on several factors, some of which are beyond the control of the project executors or even of the Government of Brazil, such as market conditions and input/output prices. MAPA will monitor the risk of non-adoption of recommended technologies, and will take steps to identify additional measures or adjustments to increase the attraction of the new methods.

144. A prerequisite for the success of the Brazil Investment Plan is that states, municipalities and the private sector should be genuinely interested in participating. The voluntary and timely involvement of these stakeholders, who have an important role in the execution of a number of the projects, depends on the way in which they are mobilized. The private sector, for example, is likely to respond positively if genuine business opportunities arise for supplies and service providers, and if other advantages are made apparent such as cost savings, increased competitiveness, and improved access to credit in increasingly demanding markets. Federal government executing agents possess a degree of previous experience of working with the states and municipalities and have included various

measures in their proposals to guarantee such participation. However, the states are expected to provide responses to the Plan over different timescales and are likely to show varying levels of interest. Much depends on the contingencies and conditions of each partner. Responding to strategic geographical priorities for leveraging resources and accelerate project implementation, the executors could experiment with cost-sharing mechanisms. Federal contributions would, for example, be more quickly forthcoming for partners to be first to submit lower value requests. In this way, a virtuous circle of incentives would be created to help produce speedier results.

11. FINANCING PLAN AND INSTRUMENTS

145. Total funding requested from the FIP amounts to USD 70 million. A further USD 57 million would be needed from other sources. In parallel, the Government of Brazil will continue to support the initiatives related to its national policies and plans through annual budget allocations. As presented in this IP, proposed projects are inserted in broader policies and national plans that are considered priority areas by the GoB. As a matter of fact, it is noteworthy to highlight that more than USD 110 million in past and current funds have been allocated to the design of methodologies, surveys and other preparation work needed to deploy actions associated to the FIP projects, as well as to support their implementation.

146. **Table 5** summarizes the financing plan for the Investment Plan projects. Total funding involved in the deployment of actions associated with the Investment Plan and leveraged by the public or private sectors is however much higher.

Table 5 – Financing plan for the Investment Plan projects
(USD Million)

Project	FIP Grant	FIP Loan.	Others	TOTAL
1.1	1.00	32.48	17.50	50.98
1.2	10.72		25.00	35.72
2.1	16.55		8.00	24.55
2.2	9.25		6.50	15.75
Total	37.52	32.48	57.00	127.00

Investment Plan Results Framework

147. **Table 6** shows the expected impacts of policies and programs being implemented by the Government of Brazil on the 2020 timeframe and for which the FIP may contribute.

148. Indicators associated to the expected results framework for the Investment Plan are shown at **Table 7**. It is worth emphasizing that during the implementation of the Investment Plan these indicators will be complemented by an analysis of gender so that they are infused with such perspective.

Table 6 – Expected impacts of the Government of Brazil Policies and Programs to which the FIP can contribute³⁰, by 2020

Results	Indicator	Baseline	Form of measurement	Information source
Reduction of deforestation and degradation; enhancement of forest carbon stocks until 2020.	Foreseen according to Decree N° 7390/2010 at national level: <ul style="list-style-type: none"> • Reduction by 40% in the annual rates of deforestation in the Cerrado biome compared with the average rate notified between 1999 and 2008; • 15 million ha of degraded pastureland recovered; • 4 million ha with a crop-livestock-forest integration system implemented and agro forestry systems; • 8 million ha with no-tillage system implemented. 	TBD	TBD	National Monitoring and Evaluation systems
Deforestation and forest degradation reduced.	<ul style="list-style-type: none"> • Change in the number of ha of Cerrado cover (% change over baseline) • Change in the number of ha of Cerrado degraded cover (% change over baseline) 	TBD	TBD	National Monitoring and Evaluation systems

³⁰ The results of the PPCerrado and the ABC plan are monitored and officially published by the Government of Brazil.

Table 7 – Expected results from implementation of the Brazil Investment Plan³¹

Results	Indicator	Baseline	Target	Information source
<ul style="list-style-type: none"> Sustainable management adopted in previously converted areas 	<ul style="list-style-type: none"> Number of rural properties inserted in SiCAR Changes in the acreage of deforested area in RL and APP registered in the CAR in the Cerrado; Changes in the acreage of the degraded areas in RL and APP registered in the CAR in the Cerrado; Identification of investments outside the forest sector for addressing the drivers of deforestation and forest degradation in the Cerrado ha of restored pasture land; ha of Crop-Livestock-Forest integration; ha of no-tillage system; ha of biological nitrogen uptake; ha of planted forests. 	TBD	TBD	<p>SiCAR – <i>Mais Ambiente</i> Program</p> <p>National Monitoring and Evaluation Systems</p>
<ul style="list-style-type: none"> Environmental information produced and disseminated and forests and forest landscapes managed in a sustainable way in order to address the drivers of deforestation and forest degradation. 	<ul style="list-style-type: none"> Forest inventory results of the Cerrado publicly available National Forest Information System (NFIS) accessible to everyone, providing information on different topics related to forest resources and forest management; Official annual reports on vegetation cover and land use in the Cerrado publicly available Official annual reports on the extent of burned areas publicly available; Number of state and municipal entities trained and organized to receive forest fire alerts; Integration of natural forest conservation into the land use planning process; Identification of legislation linked to the CAR and its instruments for detecting and processing violations Official annual reports on size of APPs and RLs publicly available. 	TBD	TBD	National Monitoring and Evaluation Systems
<ul style="list-style-type: none"> Capacity for tackling the immediate and underlying 	<ul style="list-style-type: none"> Number of technical assistance providers, producers and financial agents trained in good forestry, agricultural and livestock-raising practices. 	TBD	TBD	National Monitoring and Evaluation Systems

³¹ The GoB will not set GHG emission reduction target in the context of the Brazil FIP. Nonetheless, it will estimate the potential GHG emissions reductions in tCO₂ related to the indicator presented in the Brazil FIP by using the same methodology of the National Communication to the UNFCCC.

Results	Indicator	Baseline	Target	Information source
causes of deforestation and increased degradation.				
<ul style="list-style-type: none"> New and additional resources for forests and projects related to forests 	<ul style="list-style-type: none"> Leveraging funding from other international sources (bilateral and multilateral) 	TBD	TBD	National Communication; Financing Plan and IP
<ul style="list-style-type: none"> Incorporation of learning through the development of stakeholders thoroughly familiar with REDD+ 	<ul style="list-style-type: none"> Number of different types of knowledge-disseminating instruments created and shared. 	TBD	TBD	Reports of project executors

ANNEX 1 – PROJECTS PROPOSED FOR THE INVESTMENT PLAN

BRAZIL INVESTMENT PLAN						
SUMMARY CHART OF PROJECTS AND PROGRAMS						
Thematic Area 1 Management and Use of previously anthropized areas			Thematic Area 2 Production and Management of Forest Information			
Projects	1.1- Environmental regularization of rural lands (based upon the CAR)	1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan)	2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources	2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover		
Components	1. Implementation of the rural environmental regularization system (which includes CAR) in the 11 states of the Cerrado 2. Registration of rural landholdings in priority municipalities 3. Implementation and management of the Project 4. Implementation and management of the Brazil Investment Plan	1. Dissemination of the ABC Plan and capacity building for rural producers 2. Support to providers of services and inputs 3. Increase in access to credit 4. Implementation and management of the Project	1. Implementation of the National Forest Inventory (NFI) in the Cerrado biome 2. Consolidation of the National Forest Information System (NFIS) 3. Implementation and management of the Project	1. Implementation of an early-warning system for the prevention of forest fires 2. Implementation of a system for monitoring vegetation cover 3. Implementation and management of the Project		
MDB	World Bank	World Bank in collaboration with IFC	Inter-American Development Bank	World Bank		
Financing MDB (USD mi)	FIP grant: 1.00 IP loan: 32.48 Others: 17.50 Total: 50.98	FIP grant: 10.72* IP loan: 0.00 Others: 25.00 Total: 35.72	FIP grant: 16.55* FIP loan: 0.0 Others: 8.0 Total: 24.55	FIP grant: 9.25* FIP loan: 0.00 Others: 6.50 Total: 15.75		

* Includes USD 100,000 for preparation grant

Project 1.1- Environmental regularization of rural lands (based upon the CAR)

a) MDB and Government Agency

1. MDB: World Bank.
2. Government Agency: MMA

b) Problem statement

3. In 2002-2008 the Cerrado lost 4.1% of its vegetation cover and only 52% of the native vegetation area remains. The Cerrado, covering 11 states and with 1,500 municipalities, contains 1.032 million privately-run rural properties or settlements in addition to Protected Areas and Indigenous Lands. One of the main drivers of deforestation in the Cerrado is land conversion for agriculture and cattle ranching, given its flat topography and soils capable of being fertilized at relatively low cost. Land ownership in the Cerrado is predominantly private and the level of legal protection based on Legal Reserves (RLs) varies between 20% and 35%. However, many landholdings do not present enough area under RL or Areas of Permanent Preservation (APPs). Meanwhile, in 2008, the Government issued a key innovative directive¹ determining that landholders must provide evidence of environmental compliance to access credit.

4. The Rural Environmental Cadastre (CAR), established by a Federal Decree in 2009, is part of the *Mais Ambiente* Program to promote environmental compliance among the private sector. The CAR enables those landholders that adhere to it to have their fines suspended as long as they restore and maintain the required RL and APP, fostering a win-win situation.

5. The CAR is an electronic register of rural landholdings maintained by an official environmental entity aimed at effectively monitoring, supervising, controlling, planning and ensuring the environmental compliance of landholdings. This register contains geo-referenced details of the total area of individual farms, the areas earmarked for alternative land use, Areas of Permanent Preservation (APPs) and Legal Reserves (RLs). The CAR also specifies areas of APPs and RLs that should be restored. The implementation of the CAR in all states of the Cerrado and selected municipalities will allow better management of the landholdings and forests involved. Environmental compliance by landholders will enable them to access financial resources and other kinds of support under the ABC Plan designed to encourage them to make more sustainable use of degraded or underused land, consequently reducing pressure for deforestation in other forest areas.

6. The proposal scales up the actions to reduce deforestation, forest degradation and greenhouse gas emissions. The implementation of environmental regularization of rural landholdings through the CAR enables a more effective supervision and monitoring of deforestation and degradation of natural vegetation. Furthermore, the widespread application of the CAR contributes to the better management of the remaining forest areas on private landholdings and to recover degraded RL and APPs in them.

c) Contribution to a transformational impact and co-benefits

7. The **overall objective** of the project is to help reduce deforestation and forest degradation on rural landholdings and to reduce emissions and to increase carbon sequestration by ensuring the environmental compliance by owner or occupiers of private landholdings in the 11 states within the Cerrado biome.

¹ Resolution n. 3,545/2008 of the Brazilian Central Bank.

8. The project has **four components**:
 - a. **Implementation of the rural environmental regularization system (which includes CAR) in the 11 states of the Cerrado** – to include the provision of technical, legal and financial assistance to inform the elaboration of normative, institutional, operational and other necessary frameworks as necessary; as well as support to purchase equipment and materials; and to train stakeholders. Estimated FIP funds: USD 14 million.
 - b. **Registration of rural landholdings in priority municipalities** – to support the registration of rural properties, initially in priority municipalities containing a high percentage of degraded or deforested APPs and RLs, with priority micro-watershed basins or undergoing rapid deforestation. Estimated FIP funds: USD 12 million.
 - c. **Implementation and management of the Project** – to support activities related to the management and implementation of the Project. A project Director will be responsible for overall project implementation. The project will produce guidelines and manuals and promote meetings and workshops to build capacity at Federal, State and Municipal level to implement the CAR. Additionally a communication plan will be developed as an outreach strategy to inform and involve stakeholders (municipalities, producer's and their representative entities, NGOs, others) in the project. MMA will be the main responsible to supervise technical and financial aspects of the project, and monitor project indicators. Estimated FIP funds: USD 6.5 million.
 - d. **Implementation and management of the Brazil Investment Plan** – to enable the functioning of the Plan Management Unit to support activities of management, monitoring and evaluation and outreach of the Brazil Investment Plan with a view to strengthen the coordination and synergies amongst projects throughout the execution phase. Estimated FIP funds: USD 1.0 million.
9. The main **co-benefits** of the project are as follows:
 - **environmental**: a) Conservation of greater biodiversity and increase in genetic flows in the forested areas of the APPs and RLs, as well as in the remaining forests; b) Protection of soils and water resources; c) Protection of headwaters of the rivers that form the Pantanal and which are located in the Cerrado of the central plateau. These are vital for the continued existence of the large floodable areas, their biodiversity and sustainable use; d) Assistance to landholders and special beneficiaries (including family farmers and traditional communities) to comply with environmental requirements in order to enable them to access financial resources and other types of support for adopting the sustainable technologies enshrined in the ABC Plan.
 - **socio-economic**: a) Enabling landholders to access the resources and other assistance services provided under the ABC Plan; b) Assurance to landholders (including property owners, land squatters, land reform settlers, family farmers and traditional communities) that they are fulfilling part of the environmental legislation requirements, enabling them to undertake investment in agricultural products that will allow them to access a range of markets which require such compliance; c) Establishment of enabling requirements for landholders, (including land reform settlers and traditional communities) to access target rural credit as PRONAF; d) Increase of both employment and income for landholders (including land reform settlers and traditional communities) and other partners in the business chain generated by farming activities, therefore contributing to poverty alleviation.
 - **institutional**: a) Development or enhancement of policies, standards, methodologies and protocols for implementing the CAR at the national, state and municipal levels; b) Strengthening of support to IBAMA and to ICMBio to act in accordance with their mandate under CAR; c) Enhanced efficiency on management of the project, including monitoring and evaluation of its implementation and results; d)

Establishment of partnerships between government and rural workers representative institutions to promote effective environmental law compliance in agribusiness and productive chains.

10. The **contribution of the project to a transformational impact** is that the CAR system would be available to serve the entire country. The system to be developed and then deployed in the 11 states will be field-tested and ready to be deployed in the other 15 states and Federal District creating a **true** national CAR.

11. **Another contribution to a transformational impact derives** from the synergies that will be generated between the ABC Plan and the *Mais Ambiente* Program which comprises the CAR. This arrangement will enable the Project to better monitor compliance with environmental legislation and generate appropriate conditions for enabling landholders to access financial and technical resources of ABC Plan and other sources of targeted funds, to use land in a more sustainable way and protect the environment. The implementation of CAR in the Cerrado Biome will make it possible to all institutions involved in this process to acquire knowhow on CAR implementation. Besides, the project will allow the establishment of CAR that will continue after the project lifetime.

12. **Synergy with Project 1.2** – To enable producers to access resources from ABC credit lines by assuring environmental compliance in the rural landholdings registration process. Among the ABC credit lines, there is one specific to recovery of APP and RL degraded areas, which will be quantified by CAR. The RL areas are most likely to be recovered by agro-forest systems or planted forests, both are also financed by ABC credit lines.

13. A possible sub product of CAR satellite images is the mapping of land use, contributing to more accurate carbon stock estimates and degraded pasture detection. ABC finances the productive recovery of these areas.

14. Another complement is the ABC financial mechanism to increase productivity and profitability, compensating the reduction of productive area due to the return of those areas to conservation uses.

15. **Synergy with Project 2.1** – This project qualifies the information about forest remaining areas mapped by CAR by supplying data about density and diversity of these forest formations. Therefore allowing more accurate carbon stock estimative.

16. Another additional benefit is the identification of surrounding areas to be used as ecologic steppingstones, in the sense of those areas to be used for seed collection to produce nursery plants to be used in recovery of degraded areas, and to guide the selection of priority areas to create ecologic corridors. It will be possible to identify by CAR the land custody or high biodiversity spots.

17. **Synergy with Project 2.2** – The monitoring and accountability chain of deforestation and fires will have a powerful instrument when CAR and satellites detection systems are combined. The settlers will have documented their piece of land so that when fire spots or deforestation are detected, forest policy will have a quick definition of the responsible just by simple information combination.

18. The potential direct beneficiaries are the producers of approximately 1,032 million rural properties in the biome. Family farmers alone account for more than 794 thousand families, or 3.2 million people, in a preliminary calculation based on an average 4 people per family.

19. The **project focuses on** the 11 states covered by the Cerrado biome, the priority municipalities that have high rates of deforestation located in this biome and other municipalities where extensive degraded or underutilized areas continue to exist.

d) Implementation readiness

20. Brazil has past experience of implementing the CAR. This was obtained during the detailed design and implementation of the methodologies, protocols and other instruments used to

establish the CAR in municipalities in the so-called *Amazon Arc of Deforestation* in three states. This initiative resulted in the registration of 60,782 rural landholdings or settlements, with FAO and UNDP assistance. The *Mais Ambiente* Program was created by presidential decree 7,029/2009. This program describes the purpose and the methodology of CAR and the profile of rural landholdings that fit in different categories of beneficiaries.

21. Given its accumulated expertise, the Government of Brazil decided to adjust the CAR's operational methodology, developing web-based instruments that reduce the costs of the exercise and enhanced its flexibility (see <http://www.maisambiente.gov.br/>). To execute this project it will be necessary to establish partnerships and synergies with institutions, agricultural producer associations and members of civil society that are already engaged in similar actions in the beneficiary municipalities. This will help guarantee the deployment of technical skills in environmental regularization and implementation of the rural environmental management system. It will also strengthen CAR environmental compliance policies at the federal, state and municipal levels. The project will also support the procurement of equipment and services in order to facilitate execution of these activities.

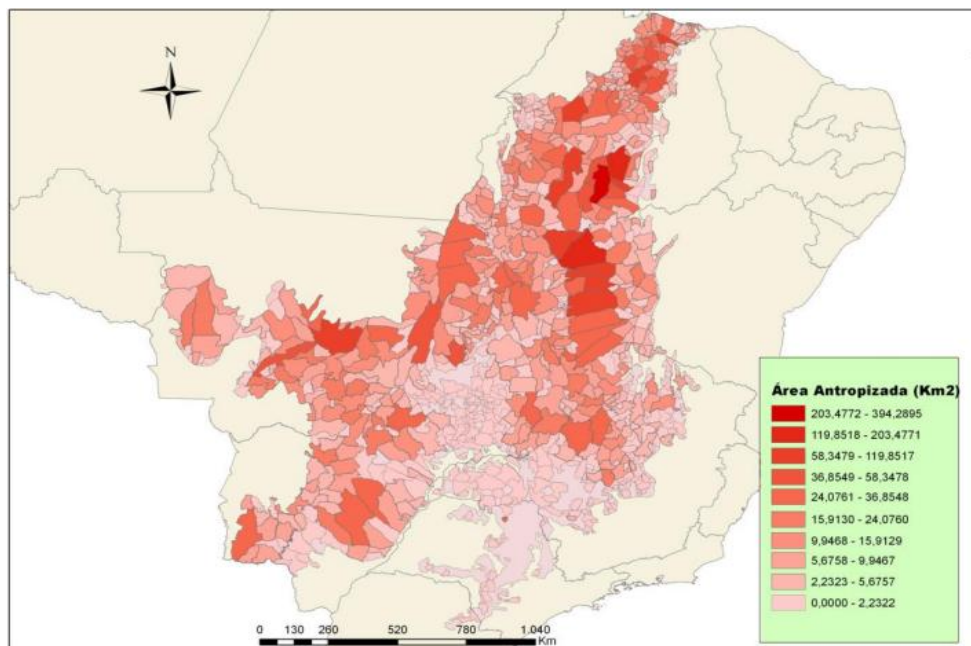
22. The restoration of APP and RL areas, which will be quantified by CAR, is eligible to be financed by ABC program credit lines.

23. There are also non-financial mechanisms planned as part of *Mais Ambiente* program, which will provide four services to special beneficiaries, namely, rural technical assistance, environmental education, capacity building, seeds and nursery plants. Native species will be prioritized and produced in cooperation with stakeholders such as Embrapa, MAPA and the CSO Seeds Network.

24. A specific category will be included in the CAR system to facilitate the rural land registration, free of charge, for the *Natural Heritage Private Properties* (RPPNs). RPPNs are private protected areas that represent a voluntary commitment from their owners or administrators to natural resources conservation.

25. Cerrado deforestation monitoring initiatives carried out by the GoB, together with the macro zoning of this biome, and other criteria, will define the priority municipalities for CAR implementation. **Figure A1.1** shows the deforested areas per municipality between 2009 to 2010 period. **Table A1.1** lists the municipalities with higher deforestation rates in the same time period.

Figure A1.1 – Native vegetation suppression distribution by municipalities, 2009-2010



Coordination with the CAR Project and other governmental programs.

26. The CAR is linked to the PRONAF *Sustentável*, as it contributes to promoting sustainable development of family farming and participatory use of natural resources, and to the gradual adoption of technically and economically feasible production techniques that enable a transition to agro ecological models.

27. The CAR is also linked to the citizenship territories and priority regions for poverty suppression, which it uses as criteria to prioritize some of its activities. Some examples are the CAR Project supported by the MMA in the framework of the Xingu PDRs and the projects executed in the municipalities of the Arco Verde Operation.

Table A1.1 – Identification of 20 municipalities that deforested the most in Cerrado, 2009-2010

Rank	Municipality	UF	Municipality Area (km ²)	Deforestation in the period 2009-2010	
				km ²	%
1	Baixa Grande do Ribeiro	PI	7,808.83	394.29	5.05
2	Uruçuí	PI	8,453.63	203.48	2.41
3	Formosa do Rio Preto	BA	16,186.06	143.92	0.89
4	São Desidério	BA	1,421.67	119.85	0.81
5	Mateiros	TO	9,593.24	93.06	0.97
6	Barreiras	BA	7,897.58	88.39	1.12
7	Balsas	MA	13,144.33	85.24	0.65
8	Santa Quitéria do Maranhão	MA	1,918.14	73.88	3.85
9	Codó	MA	4,363.32	69.91	1.60
10	Riachão das Neves	BA	5,837.45	68.81	1.18
11	Grajaú	MA	7,551.93	68.80	0.91
12	Paranatinga	MT	24,182.13	66.94	0.28
13	Palmeira do Piauí	PI	2,020.81	64.34	3.18
14	Chapadinha	MA	3,249.58	58.35	1.80
15	Rosário Oeste	MT	8,033.03	52.15	0.65
16	Coroatá	MA	2,264.71	51.63	2.28
17	Cocalinho	MT	16,540.56	50.95	0.31
18	Currais	PI	3,158.20	48.80	1.55
19	Caxias	MA	5,224.02	45.85	0.88
20	Crixás	GO	4,660.17	43.16	0.93

28. In addition, the constitutional funds have specific credit lines to recover degraded areas, including APPs and RLs.

Monitoring and Evaluation of Results.

29. Being a top priority for the country, the CAR/*Mais Ambiente* Program is monitored by the Sigob Target Programming and Management module of the Presidency of the Republic (PR). The Sigob is a system/software developed by UNDP/UN to “develop governance management capacity”. The system includes a transparency module by which information will be disclosed to civil society.

30. The CAR Information System – SiCAR issues reports with data on the number of rural properties registered by state, municipality, region and biome. It also informs the total number of APPs and RLs registered, as well as the surface area to be recovered and profile of rural producers in these areas. It is important to note that using satellite images is an essential aspect of the monitoring process. These images will be incorporated to a geospatial database with adequate temporal resolution, enabling monitoring the recovery of degraded areas in registered landholdings.

Management and Implementation

31. The CAR is part of the *Mais Ambiente* Program, which is coordinated by a Steering Committee that defines guidelines and execution and monitoring activities for the program. It is formed by one representative each of the MMA, MDA and MAPA.

32. It also includes one representative from each of these organizations: representative entities of family farmers or agrarian reform settlements, the crop-livestock-forest integration business sector, and Embrapa. The Steering Committee may invite representatives of other ministries, public institutions or agencies and civil society to participate, as well as specialists called on to provide information and issue expert reports. It must also invite a representative of the state environmental agency for which activities of the *Mais Ambiente* Program are being planned.

33. The program has a permanent working group formed by the MMA, ICMBio, SFB and IBAMA. Its role is to support the Steering Committee, develop the SiCAR and prepare technical guidelines, among others.

34. Implementing the CAR in the 11 states of the biome will require technical cooperation agreements to be established by the MMA and each state agency defining the responsibilities of each participant entity. A monitoring and evaluation committee will be created for each of these accords. In addition, the instrument foresees the signature of contracts and agreements to make the project activities operational. It is important to note that the *Mais Ambiente* Program has a set of guidelines geared to implementing the CAR nationwide.

35. Resources will be applied to support various projects through public procurement processes (MMA, National Environment Fund – FNMA) aiming to implement the agreements and contracts with the states, municipalities and NGOs of the biome.

e) Potential national and international partners, including their REDD+ financial support

36. The main partners involved in implementation of this project are the State Environmental Agencies and IBAMA. Others could contribute positively to the project, such as: international partners, municipalities, local communities, public and civil society organizations, the private sector, cooperatives and farmers' associations, the Federal Government (MAPA, MDA etc), and the State and Municipal governments (to be defined) in the Cerrado biome.

37. The MMA has also been working to establish other linkages associated to the Plan, like integrating and adapting the federal SiCAR to the states. Some of them already have CAR initiatives with specific laws and systems. This activity consists of acquiring images in a corporate manner, making them available to the entire government. IBAMA participates by developing and hosting the federal system.

38. MDA and its *PRONAF Sustentável* funding are expected to collaborate with the Brazil Investment Plan.

f) Rationale for FIP financing

39. The Project requires FIP financing because implementation of this environmental control instrument of landholdings involves a substantial financial outlay for the states involved. Moreover, the *Mais Ambiente* Program, which underpins the CAR, determines that geo-referencing of the data presented in the outline sketch must be prepared by the environmental agency or a duly-qualified public or private institution at no expense to smallholders, family farmers or traditional peoples and communities prepared to sign the term of adhesion or commitment. The Project uses a simplified low-cost methodology based on modern technological resources that facilitates wide dissemination of the instrument, making it easier for many family farmers and producers to accept it.

40. The FIP funds will allow financial resources to be leveraged from the public sector, possibly through partnerships with the states interested in investing locally in CAR. As noted, registration of landholdings is a prerequisite for owners to access subsidized finance under the ABC Plan

which supports sustainable activities on previously converted areas.

41. The Department of Environment, Food and Rural Affairs – DEFRA, Government of the United Kingdom, has recently signed an agreement of GBP 10 million (approximately USD 16 million) with the World Bank in support of actions proposed by MMA to tackle climate change in the Cerrado. Of these funds, about USD 9 million should be invested on promoting the CAR in the Cerrado biome. Thus, the preparation of this FIP CAR project will also consider the best way to combine these efforts, promoting synergies and avoiding duplication.

42. There are also ongoing discussions with *Kreditanstalt für Wiederaufbau Bankengruppe* – KfW aiming at supporting CAR initiative in the transition region between Cerrado and the Amazon. It is estimated that the private sector will also contribute to financing project-related activities. Large and medium-sized landowners will cover the costs of registering their landholdings and recovering degraded areas, possibly benefiting from the economies of scale offered when the registration process is underway in the selected municipalities.

43. The CAR promotes to restoration of degraded APPs and RLs. It involves a series of medium and long term activities and requires continued inspection and monitoring of plant cover in rural properties after they are registered in the cadastre. As legacy from the process the states will inherit a structure that makes it easier (efficiency, debureaucratization, low costs) for landowners to join, and an efficient tool to manage forest assets and intersectoral policies. Detailed, encompassing and uniform data will be provided for the planning process, thereby linking decision-makers, information producers and users to rational and responsible use of the biome's natural resources.

g) Safeguards

44. The project will comply with the current safeguards required by Brazilian regulations, as well as with those of the IBRD, including environmental and social safeguards OP/BP 4.01, OP/BP 4.04 and OP/BP 4.36. Eventual negative impacts will be identified during the design and analysis stages. The project will be discussed in workshops and the opinions and recommendations of the interested parties participating in these events will be taken into consideration in the project submission to the World Bank.

h) Financing Plan

45. The financial resources of the project are distributed (tentatively) as shown in the following table:

USD million			
FIP grant	FIP credit	Expected co-financing	TOTAL
1.00	32.48	17.50	50.98

46. The CAR is an instrument of a permanent governmental policy that focuses on planning and managing forest cover in rural properties at the federal, state and municipality levels. In this regard, in the Brazilian Multi-Year Plan 2012-2015 (PPA 2012-2015) Program No. 2036 “Prevention and control of deforestation and forest fires,” which comprises the CAR as one of its main activities, is a priority. The 2012 Budget Law (LOA 2012) allocates more than USD 92.5 million to initiatives related to that Program, such as structuring the agencies of the national environment system for shared forest management, and authorizing and controlling forest activities. Additional Federal Government budget funds in the order of USD 30 million will be allocated to image acquisition. It is worth noting that the government intends to maintain at least the current level of budget allocation in the coming years.

i) Project preparation timetable

47. The main stages involved in preparing, approving and commencing execution of the project are as follows:

Activities
Analysis stage: commences with the presentation of the Consultative Letter to SEAIN, and ends with the evaluation of the financing proposal in the context of the COFIEX.
Preparation stage: commences from the date of the publication of the COFIEX recommendation in the Official Gazette (DOU), and ends with the receipt by the Government of Brazil of the Drafts of the Loan and Guarantee Contracts (in this case) submitted by the Financing Entity
Negotiating phase: commences from the date of receipt by the Government of Brazil of the draft contract, and finishes at the end of the negotiations between the Government of Brazil and the Financing Entity.
Signature phase by the parties: begins from the date of closure of the negotiations of the draft contract, and finishes with a formalization of the contract arrangements (i.e. signature) referring to the external credit operation. Formalization of contract subject to approval of the external credit operation by the Federal Senate.
Effective phase: commences from the date of the signature of the Loan and Guarantee Contracts (if this is the case), and finishes on the date of the first disbursement.
Execution phase: begins from the date of the first disbursement and finishes on the date planned for the last disbursement, in accordance with that set forth in the Loan Contract of the operation.

j) Request for project preparation grant

48. FIP preparation grant for Project 1.1 will not be necessary. The costs for preparing this Project will be covered by funds from other sources.

Project 1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan)

a) MDB and Government Agency

49. MDB: World Bank in collaboration with the International Financial Corporation (IFC).

50. Government Agencies: Ministry of Agriculture, Livestock and Food Supply (MAPA)/Embrapa.

b) Problem statement

51. The Cerrado biome is an important agricultural region in Brazil. From the 1960s, it began to receive public and private infrastructure investments which boosted agricultural production in the region. The Cerrado is now responsible for more than half of the soybean production in Brazil. Agriculture occupies around 22 million ha, involving mechanized farming on large tracts of land and the widespread use of chemical inputs to correct soil acidity and enhance fertility. It is estimated that in the Cerrado there are around 50 million heads of cattle, almost 33% of the national herd, on 54 million ha.

52. Conserving nature and reducing GHG emissions arising from land-use changes in the Cerrado are related to improving the management of land and natural resources in private landholdings. The challenge is now to ensure that agriculture, especially in the Cerrado, continues to develop by adopting sustainable practices that maintain or enhance productivity and profitability while conserving the natural resources of the region and reducing greenhouse gas emissions. The project aims to contribute to the efforts made by the Government of Brazil to respond to this challenge, involving improvement in land use and management and protecting natural resources on private landholdings.

53. The Brazilian agricultural sector already has available many proven sustainable production technologies that can be adopted to reduce GHG emissions and capture and increase carbon stocks in biomass and soil. As part of the National Policy on Climate Change (PNMC), Brazil has developed the Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture, also known as the ABC Plan (Low Carbon Emission Agriculture Plan) to increase the rate of adoption of such technologies by the private sector. The overall objective of the ABC Plan is to ensure the continued improvement of sustainable management and use of natural resources by the agriculture sector, with a view to reducing greenhouse gas emissions and enhancing CO₂ uptake on the vegetation and soil, while increasing productivity.

54. The main tool of the ABC Plan is a special credit line that can be accessed by rural producers who adopt good agronomic practices that reduce the impact of greenhouse gas emissions. The terms offered by the ABC credit line are much more attractive than the regular rural credits, serving as incentive for farmers to convert their traditional agriculture practices to low carbon ones.

55. This financial support is necessary to cover the initial costs involved in purchasing new machinery, changing to different agricultural inputs etc. The plan comprises seven programs, six of which refer to mitigation techniques and activities for adapting to climate change. The mitigation techniques supported by the ABC Plan were selected among those verified by Embrapa as the most adequate for the different Brazilian conditions and which can produce clear reduction of GHG emissions without compromising productivity. The techniques eligible under the ABC Plan, always in areas previously converted, are: (i) no-tillage planting; (ii) recovery of degraded pasture land; (iii) crop-livestock-forest integration system; (iv) planting of commercial forests; (v) biological nitrogen uptake; and (vi) treatment of animal waste. **Table A1.2** indicates the potential GHG emission reduction by each mitigation technology supported by ABC plan in Brazil, when compared to the traditional practices being adopted in Brazil.

Table A1.2 –Potential GHG emission reduction by each mitigation technology supported by the ABC Plan

ABC Plan technologies	Agriculture objective to 2020	
	Area (million ha)	Million CO ₂ eq/year
1. Recovery of degraded pasture land	15.0	104.0
2. Crop-livestock-forest integration	4.0	22.0
3. No-tillage planting	8.0	20.0
4. Biological nitrogen uptake	5.5	10.0
5. Planting of commercial forests	3.0	10.0
6. Treatment of animal waste		7.0

Source: Plano Setorial de Mitigação e de Adaptação às Mudanças Climáticas para a Consolidação de uma Economia de Baixa Emissão de Carbono na Agricultura. MAPA 2010.

56. The main challenge is that less than 10% of the Government of Brazil’s allocated resources for the ABC Plan (BRL 3 billion in 2012) have been accessed by rural producers. The reasons for this relatively low access to the ABC funds include: (i) lack of knowledge by farmers about the plan; (ii) financial agents unaware of the plan and therefore unable to offer its benefits to their clients; (iii) the lack of technical assistance services to help farmers undertake projects using practices recommended by the Plan; and (iv) continued non-compliance with environmental legislation, mainly concerning RLs and APPs, without which credit cannot be accessed by farmers.

c) Contribution to a transformational impact and co-benefits

57. The **overall objective** of the project is to help reduce deforestation and degradation of forest on rural landholdings, reduce emissions and increase carbon sequestration in private landholdings. The project, together with a wider set of initiatives and resources, seeks to contribute to the success of the broader adoption of the ABC Plan by the private sector.

58. The project has **four components**:

- a. **Dissemination of the ABC Plan and capacity building for rural producers** – to undertake campaigns, training courses, technical events for publicizing the ABC Plan, its modus operandi, requirements and procedures (including those related to rural land environmental registration), recommendations for accessing credit and the new technologies, and business models designed to increase the number of farmers interested in the benefits offered by the ABC Plan by adopting the recommended technologies. The component also targets financial agents, farmers’ associations and suppliers of agriculture-related technical services. Estimated FIP funds: USD 7.15 million.
- b. **Support to providers of services and inputs** – to train professionals, technical staff and other practitioners involved in agricultural production in the techniques eligible under the ABC Plan, and in the operational aspects of the plan. Training will also be provided on environmental regularization of rural landholdings, including the benefits of adhering to the Rural Environmental Cadastre (CAR). Other activities include establishing a critical mass necessary for leveraging adoption of the required technologies, as well as to foster the creation of facilities for producing seedlings (both native and exotic), with a view to implementing agro forestry systems useful for restoring Areas of Permanent Preservation and Legal Reserves. This component will also support the establishment of technical reference units for training professionals, technical staff and producers. This could also involve improving the recommended technologies and undertaking studies, for example, to streamline the economic, financial and operational elements of the plan from the social and producer standpoints. Estimated FIP funds: USD 23.97 million

- c. **Increase in access to credit** – to upgrade or establish appropriate mechanisms, protocols, procedures and instruments to facilitate farmers’ access to the ABC credit line. This component will also provide training sessions for bank staff and professionals to learn about the ABC Plan and the abovementioned instruments, improving their ability to offer ABC credit to the potential clients. Estimated FIP funds: USD 2 million.
- d. **Implementation and management of the Project** – to support activities related to the management and implementation of the Project. A project Director will be responsible for overall project implementation. MAPA will be the main responsible to supervise technical and financial aspects of the project, and monitor project indicators. Estimated FIP funds: USD 2.6 million.

59. The main **co-benefits** of the project are as follows:

- **environmental:** a) Reduction of pressure for converting new native forest areas, thereby protecting existing biodiversity and carbon stocks; b) Reduction of erosion on cultivated land; c) Increase in rainwater infiltration; d) Improvement of the physical, chemical and biological conditions of the soil; e) Enhancement of the use of animal waste treatment for generating biogas, energy and compost, thereby reducing water and soil pollution; f) Support to the environmental registration of small rural landholdings.
- **socio-economic:** a) Continuous and sustained upscaling of conservation practices concerned with land use and management in the different sectors of the Brazilian agriculture which can contribute to reduce GHG emissions or increase carbon sequestration; b) Decrease in production costs and consequently increase in landholdings’ income through augmented production and productivity by enhanced use of the following technologies: recovery of degraded pasture land, crop-livestock-forest integration, agro forest systems, direct planting (no-tillage) system, biological nitrogen fixation and planted forests.
- **institutional:** a) Enhanced efficiency on management of the ABC Plan nationwide, as well as monitoring and evaluation of its implementation. It will also support other actions such as monitoring fires, fine-tuning the recommended technologies, undertaking studies focused on improving the operational and economic/financial efficiency of the ABC Plan from both the producer and social standpoints.

60. **The main contribution of the project to transformational effect** arises from the synergies that will be generated between the ABC Plan and the *Mais Ambiente* program, through which Project 1.1 Environmental Regularization of Rural Lands (based upon the CAR) will generate the conditions for landowners to access the technical and financial support provided under the ABC Plan and from other sources, which will enable them to use land in a more sustainable manner as well as protect the environment. **As a result**, the consolidation of a low carbon emission economy in the agricultural sector will improve the efficient use of natural resources and encourage producers and rural communities to play a positive role in deforestation reduction.

61. **Another contribution of the project to a transformational impact** is that the training and dissemination materials and tools successfully deployed in the Cerrado will be used by the MAPA to promote broader access to the ABC Plan in all other regions of Brazil. Thus, it will contribute to expand the adoption of low carbon agriculture in Brazil.

62. **The project focuses on** the Cerrado region, given its high agricultural potential and the need to conserve its natural areas. The region is also at an advanced stage of anthropization. The technology recommended by the ABC Plan will intensify sustainable land use and reduce greenhouse gas emissions, reducing pressure for deforestation of new native forest areas and converting them for agricultural use.

d) Implementation readiness

63. Technical teams from MAPA and Embrapa will implement the project activities jointly. These organizations have substantial experience in activities proposed in the project. The low carbon emission technologies are validated and widely available. There is an already established network comprising the national agriculture and cattle raising research system and the rural technical assistance present throughout the Cerrado biome region. Private sector and civil society are also interested in supporting the diffusion of these technologies.

e) Potential national and international partners, including their REDD+ financial support

64. The main partners involved in implementing this project are the Ministries of Agrarian Development (MDA, co-responsible for the ABC Plan), MF and MMA, which is responsible for Project 1.1- Environmental Regularization of Rural Lands (based upon the CAR).

65. Other possible partners are the following institutions: State Technical Assistance and Rural Extension Companies (ATER), State Agricultural Secretariats, public and private universities, State Agricultural Research Organizations (OEPAs), public banks (Banco do Brasil, Bank of the Amazon etc), civil society representatives, the manufacturing sector, workers, cooperatives, agricultural federations, NGOs etc).

f) Rationale for FIP financing

66. The project requires FIP financing in order to execute a large number of actions aimed at training the agricultural sector and providing rural technical assistance and liaising with the financial sector in a very large area (Cerrado Biome), making possible to reduce deforestation pressure in native Cerrado areas to agriculture and cattle raising.

67. FIP resources will enable the ABC Plan credit line to be accessed by farmers intending to adopt suitable agricultural practices eligible under the ABC Plan. In this way financial agents will make the resources from rural credit available and this will result in the strengthening of Technical Assistance and Rural Extension activities, environmental registration of rural lands and will also support the monitoring and tracking activities under the ABC Plan.

68. The MAPA is exploring with the World Bank, additional support from bilateral partners and a possible lending operation.

g) Safeguards

69. The project will comply with the current safeguards required by Brazilian regulations as well as with those of the IBRD, including the environmental and social safeguards OP/BP 4.01, OP/BP 4.04, OP/BP 4.36 and OP 4.09. During the design and analysis stages the project will be discussed in participatory workshops with a view to obtaining the opinions and recommendations of the interested parties, which will be taken into consideration in the project submission to the World Bank

h) Financing Plan

70. The financial resources of the project are distributed (tentatively) as shown in the following table:

USD million			
FIP grant	FIP credit	Expected co-financing	TOTAL
10.72	0.00	25.00	35.72

71. The Government of Brazil’s commitment to initiatives related to the proposed Project is evidenced by the investment on research and development of ABC Plan technologies over the past years and the allocation of approximately USD 0.7 million annually for MAPA implementation, as well as availability of the ABC Program credit line (around USD 1,8 billion in

credit).

i) Project preparation timetable

72. The main dates estimated for preparing, approving and commencing execution of the project are as follows:

Activities
Analysis stage: commences with the presentation of the Consultative Letter to SEAIN, and ends with the evaluation of the financing proposal in the context of the COFIEX.
Preparation stage: commences from the date of the publication of the COFIEX recommendation in the Official Gazette (DOU), and ends with the receipt by the Government of Brazil of the Drafts of the Loan and Guarantee Contracts (in this case) submitted by the Financing Entity
Negotiating phase: commences from the date of receipt by the Government of Brazil of the draft contract, and finishes at the end of the negotiations between the Government of Brazil and the Financing Entity.
Signature phase by the parties: begins from the date of closure of the negotiations of the draft contract, and finishes with a formalization of the contract arrangements (i.e. signature) referring to the external credit operation. Formalization of contract subject to approval of the external credit operation by the Federal Senate.
Effective phase: commences from the date of the signature of the Loan and Guarantee Contracts (if this is the case), and finishes on the date of the first disbursement.
Execution phase: begins from the date of the first disbursement and finishes on the date planned for the last disbursement, in accordance with that set forth in the Loan Contract of the operation.

j) Request for project preparation grant

73. The project will request USD 100,000 to cover the analyses, consultations and preliminary meetings needed to define the technical characteristics of the systems to be developed by the project.

Project Preparation Grant Request¹

FOREST INVESTMENT PROGRAM			
Project/Program Preparation Grant Request ²			
1. Country/Region:	Brazil	2. CIF Project ID#:	(Trustee will assign ID)
3. Project Title:	<i>Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan)</i>		
4. Tentative FIP Funding Request (in USDmillion total) for Project ³ at the time of Investment Plan submission (concept stage)::	Grant: US\$10.72M	Loan: n/a	
5. Preparation Grant Request (in USD):	US\$100,000	MDB: IBRD	
6. National Project Focal Point:	Helinton José Rocha, Ministry of Agriculture, Livestock and Food Supply		
7. National Executing Agency (project/program):	Ministry of Agriculture of Agriculture, Livestock and Food Supply		
8. MDB FIP Focal Point and Project/Program Task Team Leader (TTL):	Headquarters FIP Focal Point: Gerhard Dieterle	Task Team Leader: Garo Batmanian	
<p>9. Description of activities covered by the preparation grant:</p> <p>The overall objective of the project is to help reduce deforestation and degradation of forest on rural landholdings, reduce emissions and increase carbon sequestration. The project, together with a wider set of initiatives and resources, seeks to contribute to the success of the broader ABC Plan.</p> <p>The project preparation grant will be used to cover the following activities:</p> <ol style="list-style-type: none"> 1) Carry out the social and environmental assessment necessary as part of the IBRD project preparation cycle; 2) Consultation with key stakeholders 3) Studies to develop specific targets, monitoring framework and gathering of the baseline data, based on the overall IP framework. 4) Studies to identify the more cost effective interventions necessary for the adoption of the ABC plan, which would then be addressed during project implementation 5) Development of a project management plan. 			

¹ To be annexed to the Investment Plan.

² A separate template needs to be presented for each project and program preparation grant request listed in the Investment Plan.

³ Including the preparation grant request.

10. Outputs:	
Deliverable	Timeline
Environmental management framework prepared (and other framework if necessary);	four months after IP approval
Detailed project description prepared satisfactory to the IBRD	Five months after IP approval
11. Budget (indicative):	
Expenditures ⁴	Amount (USD) - estimates
Consultants	65,000
Equipment	
Workshops/seminars	15,000
Travel/transportation	10,000
Others (admin costs/operational cost)	10,000
Contingencies (max. 10%)	
Total Cost	100,000
Other contributions:	
• Government	20,000
• MDB	
• Private Sector	
• Others (please specify)	
<p>12. Timeframe (tentative) Final Joint Mission: February 17, 2012 Investment Plan for FIP Sub-Committee Endorsement: May 4, 2012 Grant Request for MDB FIP Committee Approval: May 4, 2012 Submission of pre-appraisal document for FIP Sub-Committee Approval: five months after IP approval Expected Board/MDB Management⁵ approval date: two months after pre-appraisal</p>	
<p>13. Other Partners involved in project design and implementation⁶: Banks who handle ABC loans, State Agriculture Secretariats, Farmers associations.</p>	
<p>14. If applicable, explanation for why the grant is MDB executed: The grant will be recipient-executed</p>	
<p>15. Implementation Arrangements (incl. procurement of goods and services): will follow the policies and procedures of IBRD</p>	

⁴ These expenditure categories may be adjusted during project preparation according to emerging needs.

⁵ In some cases activities will not require MDB Board approval

⁶ Other local, national and international partners expected to be involved in design and implementation of the project.

Project 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources

a) MDB and government Agency

74. MDB: Inter-American Development Bank (IDB)

75. Government Agency: Brazilian Forest Service (SFB)/MMA

b) Problem statement

76. In Brazil there is a need for improving the generation of accurate and comprehensive information on forest resources such as: extent and condition of the resources, forms of management, the production chains involved, and other aspects related to forest use (e.g. the local role of forest timber and non-timber resources, marketing etc). There is also the challenge to improve the production of information on the density of carbon, in main forest types, of above and below ground through the use of more advanced methods and primary data which covers the entire biome.

77. The production of standardized and systematic forest information represents a fundamental element for more precise and well informed decision-making by the public and private sectors with relation to the sustainable use of forest resources and the consequent reduction of deforestation and forest degradation.

78. Implementation of the National Forest Inventory (NFI), the wide availability and dissemination of information about forest resources and their utilization through the National Forest Information System (NFIS), have been developed by the Government of Brazil with a view to solving some of the above-mentioned problems. However, the NFI and NFIS have not yet been implemented in Cerrado. Taking into account the rich biodiversity present in the natural ecosystems of the region, as well as its carbon stocks, it is vital to implement a mechanism for producing and disseminating accurate, good quality and timely information to contribute to valorizing forest resources from both an environmental and socio-economic functions.

c) Contribution to a transformational impact and co-benefits

79. The **overall objective** of the project is to implement the NFI in the Cerrado biome and to consolidate the NFIS as key policy instruments that will produce timely, good quality information for decision-makers of the public and private sectors on forest resources and their use, thereby contributing to sustainable programs focused on the mitigation of GHG emissions in the Cerrado.

80. The project has **three components**:

- a. **Implementation of the National Forest Inventory in the Cerrado Biome** – to include the collection and assembling of biophysical and socio-environmental data in approximately 5,000 sample points in the territory, to carry out analyses of landscape samples for the study of forest fragmentation and land use, as well as to combine the use of this dataset with vegetation mapping to produce regional-wide results. At the conclusion of the project, decision-makers and society in general will have at their disposal accurate estimates capable of dispelling ignorance about many issues: e.g. the area of forest cover, forest degradation, forest regeneration, at-risk species or those threatened by extinction, estimates of increasing carbon stocks (volume and biomass) and soil carbon, both above and below ground, diversity of forest tree species, forest management, forest dynamics, health and vitality, characteristics of soils under the forest, forest fragmentation, the proportion of different land uses, trees growing outside the forest, local use of forest products and services by rural populations (traditional or not) and their perception of the importance of these resources.

The Cerrado National Forest Inventory (NFI) will be implemented through four subcomponents: i) Establishing and strengthening institutional partnerships, including the state environment secretariats and the institutions that will participate in the NFI (universities, herbaria, etc); ii) Strengthening management capacity for the Cerrado NFI, including detailed planning of its implementation, adapting and updating the data gathering methodology documents, training field teams and quality control teams, conducting complementary research in the Cerrado, and if necessary adjusting the information system according to the specificities of the biome; iii) Establishing a forest management baseline in the Cerrado, which involves obtaining data- including field measurements to obtain biophysical and socio-environmental data-, analyzing sample units from the landscape, strengthening the Cerrado permanent land tracts network, gathering information on planted forests, pilot study on NFI implementation in municipalities, updating available vegetation maps, and processing and analyzing all the data obtained; and iv) Fostering the application and dissemination of Cerrado NFI information and results, including a specific communication plan to inform the biome's society about the project, technical-scientific events to discuss the results, thematic reports on the Cerrado biome forests and broad dissemination of the results achieved. Estimated FIP funds: USD 15.5 million.

- b. **Consolidation of the National Forest Information System** as the main platform for the analysis, dissemination of information and knowledge management of forest resources in the Cerrado and their potential use for promoting actions and activities leading to climate change mitigation, in addition to up scaling the system to embrace issues of national interest (forest resources, decentralized forest management at state level, forest production, teaching and research etc). The Information System will serve as a management and reference tool for society as a whole. This project will also develop and establish modules that also encourage trade of forest products in the Cerrado, by fostering production chains of timber and non-timber forest products, as well as measuring and adding value to environmental services in this biome. At the conclusion of the project, decision makers and society as a whole will have at their disposal a unique information platform fed by a number of different institutions, allowing easy access (appropriately formatted for different users) to scales (biomes, states, municipalities, hydrographic basins etc) and applications. The NFIS will also make available information produced by other projects such as: environmental regularization of rural lands (based upon the CAR), sustainable production in areas previously converted to agricultural use (based upon the ABC Plan), and the implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover. Furthermore, the data produced by the NFI and disseminated by the NFIS will be used to inform the Brazilian national communications and to provide information for the design, management and evaluation of national forest-related policies.

The NFIS will be consolidated through four subcomponents: i) Updating and making available information on Cerrado forest resources, including textual information and knowledge as well as information and data on the biome's forest resources; ii) Integrating the Cerrado states to the National Forest Management Portal, including training for information providers within environmental agencies and linking their information systems with the NFIS; iii) Information on the socio-economic importance of Cerrado forest resources, including information on production chains, production and consumption of forest products, employment statistics, certification, forest credit, etc; and iv) Promoting the commercialization of Cerrado forest products, an exclusive Cerrado biome module that will include a database and information uploading and sharing protocols that promote the commercialization of forest products and services related to the biome. Estimated FIP funds USD 1.15 million.

- c. **Implementation and management of the Project** – to support the Project implementation, as well as to establish a monitoring system based on indicators that will allow following up and controlling expected results *vis-à-vis* the project schedule. It includes a basic team to manage administrative processes of buying goods and services, according to BID procedures and standards, and promoting annual meetings with external participants. It will be part of the existing NFI PMU (Project Management Unit) already established to support the NFI GEF project. Estimated FIP funds: USD 0.7 million.

81. **The contribution of the project to a transformational impact.** Based on knowledge of forest resources this project contributes to transform the current paradigms and to establish a culture in which forest resources are valued as an important environmental and socio-economic asset. It fosters rural development standards based on forest maintenance and promotes sustainable practices with climate benefits.

82. The project is expected to generate:

- a. Availability of original information on carbon density above and below ground derived from primary data on the vegetation, obtained with appropriate methodology and related to the entire biome, as well as being integrated into a national information system. The estimate of GHG emissions for the Cerrado region can be improved by using such information;
- b. Availability of original spatial information which will lead to projects being developed in accordance with local needs involving optimization of the resources employed;
- c. Increased investment by the private sector resulting from valorization of the forest resources;
- d. Data and other information generated which is relevant for decision-making by public and private actors, including mitigation and adaptation policies and actions;
- e. The potential for replicating a methodology incorporating the production of, and access to reliable information on carbon density both above and below ground in other Brazilian states as well as in other biomes similar to the Cerrado around the world.

83. The main **co-benefits** of the project are the following:

- **environmental:** a) Increased knowledge on the forest and its different species, thereby contributing to the monitoring of the potential impacts of forest-related economic activities on local biodiversity and carbon stocks; b) Identification of areas of high-value for conservation and further research; c) Generation of relevant information for developing initiatives for the protection and management of local biodiversity, including the identification of environmental assets; d) Design of an information survey system that will be updated on a continuous basis (at least every 5 years) and that will allow the establishment of time series that can be used for modeling and establishing scenarios for the main variables assembled.
- **socio-economic:** a) Promotion of educational and training opportunities for civil society, increasing its participation in forest resource management; b) Generation of relevant information for developing economic activities with a social focus and paying special attention to gender equity; c) Creation of business opportunities and additional income for local communities, promoting gender equity by valorizing forest and forest resources; d) Production of information and data that can be used on adaptation strategies to climate change by traditional communities and indigenous peoples; e) Development of skills and creation of jobs in the area of forest data collection, providing new employment opportunities in the areas of research and teaching based on NFI dataset.

- **institutional:** a) Production of accurate and updated information to underpin decision-making by public managers; b) Development and management of initiatives for conservation and sustainable development; c) Strengthening and improvement of NFIS management in order to support efficient project management, including monitoring and evaluation of its implementation and results; d) Improvement of methodologies and expansion of partnerships with information-generating institutions, including more initiatives closely associated with forest resources (e.g. CAR, ABC Plan, ZEE).

84. The **project focuses on** the Cerrado biome.

d) Implementation readiness

85. Since 2006 Brazil has developed, employing broad participatory processes, a methodology for the NFI that is unique for the entire country. This methodology has been tested in all the Brazilian biomes, and the NFI has already been concluded successfully in the state of Santa Catarina and the Federal District. The NFI possesses an evaluation and quality control program for checking the quality of data collection. It also has a training and institutional strengthening program that has contributed to the quality of the results. Furthermore, the NFI is capable of producing information about carbon stocks under the 5 IPCC pools. These activities have enjoyed the active participation of public and private sector partners, civil society and the academic sector at the design and implementation stages. Experience to date indicates that stakeholders can be mobilized under the aegis of the SFB, enabling the NFI to be up scaled and extended to other states in Brazil. The partners involved in NFI implementation are practically the same, although the actual role of the institutions could possibly be different. Partners could be involved in providing institutional and logistical support, undertaking research, soil analysis, training, identification of botanical species, etc. Efforts to implement the NFI are already underway in a number of states (SC, DF, CE, RJ, SE) with budget resources from the federal government (Brazilian Forest Service – SFB), from the states themselves and from the Global Environment Facility (GEF). A project to implement the NFI in the Amazon biome financed by the Amazon Fund is currently being analyzed by BNDES. Since the national NFI methodology began to be prepared, federal budget resources were invested and a partnership with FAO was established to hold various technical meetings with national institutions and test the methodology in all the Brazilian biomes, totaling approximately 1.5 million dollars.

86. The NFIS coordination is a mandate of the Brazilian Forest Service (under Law 11,284/2006). The NFIS runs the National Forest Management Website that enables states to share information about their forest resources-related command and control activities (forest management plans, deforestation licenses, enforcement, forest legislation, institutional capacity and reforestation). The NFIS also supplies information for international reports such as the Forest Research Assessment (FAO) and International Tropical Timber Organization (ITTO). For further information visit www.florestal.gov.br. The NFI will be the main source of information on forest resources once it covers the entire country, as well as one of the main thematic areas of NFIS. Through the Brazilian Forest Service, the government invested in creating the National Forest Management Portal and obtaining, organizing and making available forest information, including historical series of a number of variables related to forest consumption and production.

e) Potential national and international partners, including their REDD+ financial support

87. The main partners in the execution of this project are: The Federal Government (IBGE, INPE, MCTI, MEC, MDIC, ICMBio, IBAMA, MAPA, FUNAI, INCRA, Embrapa), the Rio de Janeiro Botanic Garden and other divisions of the Ministry of Environment); State governments (Environment and Agriculture Secretariats); research institutions and Universities. Other partners that could contribute to the success of the project are: private businesses; NGOs; FAO; other countries' forest agencies; the Inter-American Development Bank (IDB); BNDES; The Global Environment Facility (GEF); forestry sector entities; among others.

f) Rationale for FIP financing

88. Brazil is a world reference in the monitoring of forest resources. The PRODES/INPE-MCTI system has, since 1989, tracked and made publicly available annual rates of deforestation for the Amazon biome. Recently, through the project PROBIO/MMA, satellite imaging has been used to map the remaining areas of native vegetation all over the country. The NFI will provide primary field data that will complement the vegetation coverage surveys and thereby substantially improve the quality of forest monitoring data available in Brazil.

89. In recent years the Government of Brazil has invested massively in methodologies and systems for surveying and monitoring forest resources, especially at the NFI and NFIS design stage. The first NFI cycle envisages using FIP resources for its implementation in the Cerrado. Given the substantial interest of the Federal and State governments in NFI products, funding could be forthcoming from them (to co-finance the project).

90. The NFI produces data for multiple purposes, including for biodiversity conservation, sustainable forest management, valorization of forest resources and quantifying carbon stocks (and its loss as a result of deforestation).

91. Gender mainstreaming in the project will take various forms: i) At least one member of each NFI field team will have to be a woman. ii) Gender balance is one of the main selection criteria in the interviews about the importance of forests to local communities, which will produce unprecedented information about the importance of forest resources for women in the Cerrado biome and vice versa. iii) Some variables of the NFIS like employment, education and research will be available by gender.

92. Project 2.1 furthermore presents synergies and complementariness with all the other projects and strengthens the Brazil Investment Plan. Project 1.1- Environmental regularization of rural lands (based upon the CAR) will have information about the quality and conditions of inventoried forests in rural private properties as a basis for regional assessments of APPs and RLs, including timber, biomass and carbon stock in these forests, and degrees and types of forest degradation. Because it will be spatialized, the information will serve to prioritize regions for forest restoration through the CAR. On the other hand, the NFI will be able to use satellite images acquired by the CAR in its landscape sample analysis component, the main source of information about forest fragmentation, land use categories and trees growing outside the forest. Project 1.2 Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan) will have specialized information about soil quality, including areas already converted, existence and demand of forests planted on rural properties and eventually biomass and carbon stocks in samples of converted areas in private properties. Project 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover will have information about biomass and carbon stocks in different types of forests produced by the NFI, including the degree of uncertainty by region, which can be used to quantify emissions from deforestation in the biome. Furthermore, to monitor plant cover the project will take into account the plant classification study developed by the NFI and used in the calculations and modeling proposed in Project 2.2. The statistics generated through plant cover monitoring will allow some NFI variables to be inferred for the entire biome. Crossing fire warnings with NFI land tracts will make it possible to improve the quality of NFI data analysis in the Cerrado. The NFIS will make available forest information produced by the other projects and may contain links to associated programs (CAR, ABC, Fire, etc.).

g) Safeguards

93. The project will be designed to meet the requirements of the environmental and social safeguards established in the national norms and by the IDB Environment and Social Safeguards Policies and observance of IDB Safeguards GN-2208-20 and OP 703.

h) Financing Plan

94. The financial resources of the project are distributed (tentatively) as shown in the following

table:

USD million			
FIP grant	FIP credit	Expected co-financing	TOTAL
16.55	0.00	8.00	24.55

95. So far more than USD 1.5 million has been invested to develop the NFI methodology. Besides that, the Government of Brazil allocates annually budget resources to fund initiatives related to the project, in accordance to the priority actions established on the PPA.

i) Project preparation timetable

96. The main stages for preparing, approving and commencing execution of the project are estimated in the following timetable:

Activities
Analysis stage: commences with the presentation of the Consultative Letter to SEAIN, and ends with the evaluation of the financing proposal in the context of the COFIEX.
Preparation stage: commences from the date of the publication of the COFIEX recommendation in the Official Gazette (DOU), and ends with the receipt by the Government of Brazil of the Drafts of the Loan and Guarantee Contracts (in this case) submitted by the Financing Entity
Negotiating phase: commences from the date of receipt by the Government of Brazil of the draft contract, and finishes at the end of the negotiations between the Government of Brazil and the Financing Entity.
Signature phase by the parties: begins from the date of closure of the negotiations of the draft contract, and finishes with a formalization of the contract arrangements (i.e. signature) referring to the external credit operation. Formalization of contract subject to approval of the external credit operation by the Federal Senate.
Effective phase: commences from the date of the signature of the Loan and Guarantee Contracts (if this is the case), and finishes on the date of the first disbursement.
Execution phase: begins from the date of the first disbursement and finishes on the date planned for the last disbursement, in accordance with that set forth in the Loan Contract of the operation.

j) Request for project preparation grant

97. The project will request USD 100,000 to cover the analyses, consultations and preliminary specialist workshops needed for defining the technical characteristics of the systems to be developed by the project.

Project Preparation Grant Request

FOREST INVESTMENT PROGRAM		
Project/Program Preparation Grant Request		
1. Country/Region:	Brazil	2. CIF Project ID#: (Trustee will assign ID)
3. Project Title:	<i>Forest Information to Support Public and Private Sectors in Managing Initiatives Focused on Conservation and Valorization of Forest Resources</i>	
4. Tentative FIP Funding Request (in USD million total) for Project ¹ at the time of Investment Plan submission (concept stage)::	Grant: US\$16.55M	Loan: n/a
5. Preparation Grant Request (in USD):	US\$100,000	MDB: Inter-American Development Bank (IADB)
6. National Project Focal Point:	Joberto Veloso de Freitas, Brazilian Forest Service, Ministry of the Environment	
7. National Executing Agency (project/program):	Ministry of the Environment	
8. MDB FIP Focal Point and Project/Program Task Team Leader (TTL):	Headquarters-FIP Focal Point: Gloria Visconti (gloriav@iadb.org)	TTL: Simone Bauch (sbauch@iadb.org)
<p>9. Description of activities covered by the preparation grant:</p> <p>The overall objective of the project “Forest Information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources” is to implement the National Forest Inventory (NFI) in the Cerrado biome and to consolidate the National Forest Informational System (NFIS) as key policy instruments that will produce timely, good quality information for decision-makers of the public and private sectors on forest resources and their use, thereby contributing to sustainable programs focused on the mitigation of GHG emissions in the Cerrado.</p> <p>The project preparation grant will be used to cover the following activities:</p> <ol style="list-style-type: none"> 1) Analysis of institutional capacity, human resources, monitoring mechanisms, and other implementation needs of different states where the NFI will take place; 2) Consultation with key Cerrado stakeholders including state governments, non-government organizations and private sector, on NFI and NFIS; 3) Preliminary workshops needed for defining the technical characteristics of the NFI and the NFIS systems to be developed by the project; 4) Development of a project monitoring and evaluation systems, as well as a project management plan. 5) Technical support for the project development, according to FIP standards. 		

¹ Including the preparation grant request.

10. Outputs:	
Deliverable	Timeline
(a) Report on the assessment needs for implementation of NFI and NFIS.	September 2012
(b) Report assessment of the main findings from the consultations with key stakeholders in Cerrado.	August 2012
(b) Report on the technical characteristics of the system to be developed by the project.	September 2012
(c) Project monitoring and evaluation system, and project management plan.	September 2012
(d) Detailed project proposal, according to FIP standards.	September 2012
11. Budget (indicative):	
Expenditures ²	Amount (USD) - estimates
Consultants	25,000
Equipment	5,000
Workshops/seminars	25,000
Travel/transportation	25,000
Others (admin costs/operational costs)	10,000
Contingencies (max. 10%)	10,000
Total Cost	100,000
Other contributions:	
• Government	TBD
• MDB	TBD
• Private Sector	TBD
• Others (please specify)	TBD
12. Timeframe (tentative)	
Submission of pre-appraisal document for FIP Sub-Committee Approval: October 2012 Expected Board/MDB Management ³ approval date: November 2012	
13. Other Partners involved in project design and implementation⁴ : Governments from the states where the NFI will be implemented (Environment and Agriculture Secretariats); Federal Government agencies (IBGE, INPE, MCTI, MEC, MDIC, ICMBio, IBAMA, MAPA, FUNAI, INCRA, Embrapa), regional herbariums, and other divisions of the Ministry of Environment, research institutions and Universities, NGOs, BNDES, FAO, and private sector, among others.	
14. If applicable, explanation for why the grant is MDB executed : the grant will be executed by the Brazilian Forest Service of the Ministry of Environment.	
15. Implementation Arrangements (incl. procurement of goods and services): Consistent with the FIP Operational Guidelines and the FIP Investment Criteria and Financing Modalities, the procurement of goods and services under this project will follow the policies and procedures of Government of Brazil and the Inter-American Development Bank.	

² These expenditure categories may be adjusted during project preparation according to emerging needs.

³ In some cases activities will not require MDB Board approval

⁴ Other local, national and international partners expected to be involved in design and implementation of the project.

Project 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover

a) MDB and Government Agency

98. MDB: World Bank

99. Government Agency: General Coordination for Management of Ecosystems and Biodiversity (CGEC) of the Ministry of Science, Technology and Innovation (MCTI)

b) Problem statement

100. The quantification and verification of GHG emissions require monitoring strategies at different spatial and temporal scales. Integration at the biomes scale is possible only with the use of remote sensing tools. Since 1988, Brazil has systematically monitored the dynamics of vegetation cover in the Amazon, generating annual deforestation data with the PRODES system, as well as near real-time alerts for rapid control intervention actions (DETER system). Other countries with tropical forests are adopting these systems. *Ad hoc* surveys on vegetation cover are still undertaken in biomes apart from the Amazon but opportunities now exist to improve and systematize monitoring of other biomes such as the Cerrado, at more regular intervals in order to enhance effectiveness of control and conservation measures.

101. The adoption of deforestation control measures, as well as of positive incentives such as REDD+ in the Cerrado, Caatinga and Pantanal biomes, involves developing monitoring and verification methodologies that are scalable, replicable and accurate. The main challenge is to differentiate between areas with lower tree density from those disturbed by human activity. While in the Amazon the presence of undergrowth denotes deforestation, natural areas exist in the other three biomes where grass, bush and tree strata coexist.

102. The coupling of satellite monitoring to methods for carbon accounting (through recognizing the different vegetation types and land use) is essential for defining and increasing the accuracy of the reference levels and for reducing the uncertainties related to GHG emissions estimates. A high resolution monitoring system for the Cerrado analogous to the one in place for the Amazon needs to be deployed based on open source geographic information systems that enable a collaborative environment to develop and integrate tools. This way the system will be able to manage all the data needed for associated projects, including: a system to monitor plant cover changes by remote sensing (additional and complementary to a deforestation warning system) and a conceptual model for calculating greenhouse gas emissions from deforestation (high resolution).

103. As such, a monitoring system/platform must be designed with a multisensory and multiscale approach for various objectives and many institutions, functioning as a command and control instrument but also generating information to guide land use planning and management.

104. Given the dynamics of deforestation in the Cerrado biome, potential exists for implementing conservation and management initiatives for the remaining forest areas. A number of special elements must be taken into consideration, particularly the impact of fire. Fire is one of the major ecological agents in the structure of vegetation, influencing the uptake and release of carbon as well as particulate and GHG emissions. While fires in the Amazon are a rare natural phenomenon, they occur more frequently in the Cerrado, where they play a key role in its ecological functioning. Land use changes have altered the natural burning regime in this region. Flames caused by farmers setting fire to pastures to induce regrowth in the dry season often get out of control and spread over large areas. These fires can also affect Protected Areas, Indigenous Lands, Areas of Environmental Preservation and Legal Reserves. Forecasts of climate change scenarios indicate an increased occurrence of fires, not only as the result of longer dry seasons but also due to the reduction of intervals between periods of extreme drought (the cause of the

majority of large fires in the tropics).

105. In the period of 2001 to 2002 the total global burned area equaled 3.66 million km² (Roy et al., 2008⁵). In South America it totaled 172,000 km², which accounts for 5% of total area burned (Chang & Song, 2009⁶; Roy et al., 2008). In this region 63% of the total burned area is concentrated in Brazil (Bella et al., 2006⁷).

106. According to van der Werf et al. (2004⁸), two-thirds of the atmospheric CO₂ concentrations in the period of 1997 to 2001 can be attributed to burned areas, which corresponds to 50% of all fossil fuel emissions (Bowman et al., 2009⁹). In addition to CO₂, trace gas and aerosol emissions to the atmosphere reduce CO₂ fixation by 17% (Goldammer, 1990¹⁰ in Atjay et al., 1979).

107. By reducing vertical wind circulation in the atmosphere – which hinders cloud formation and consequently precipitation (Goldammer, 1990) –, and by reducing albedo in areas covered by ice and snow, black carbon aerosols emitted from biomass burning are the second most influential factor on the climate system. Report of the United Nations Environment Program (UNEP¹¹) and World Meteorological Organization states that implementing comprehensive measures to reduce black carbon and ozone emissions can bring about fast benefits for the climate.

108. In Brazil, the natural fire regime varies depending on the biome. While in the Amazon fire is originally a rare natural phenomenon, in the Cerrado it occurs more frequently and plays a key role in its ecological functioning. It is driven by high temperatures, which increase evapotranspiration and reduce the moisture content in the vegetation, the length of the dry season, which determines the amount of fuel and extent of the fires, variations in lightning frequency and factors like population density, land management and use, and road density (Archibald et al.¹², 2009; Jin, 2010¹³).

109. Land use change has altered the natural burning regime. Fire from prescribed burning used to induce pasture regrowth in the dry season often escapes and spreads to larger areas, for instance. At times it also destroys conservation units, indigenous lands, protected areas and legal reserves. From 2002 to 2010 close to 67% of the surface area burned in Brazil concentrated in the Cerrado biome with significant impacts on indigenous lands, especially in transition areas

⁵ Roy, DP, Boschetti, L, Justice, CO & JU, J, 2008, 'The collection 5 MODIS burned area product – Global evaluation by comparison with the MODIS active fire product. *Remote Sensing of Environment*, vol. 112, pp. 3690-3707.

⁶ Chang, D, & SONG, Y, 2009, 'Comparison of L3HRC and MODIS global burned area products from 2000 to 2007', *Journal of Geophysical Research*, vol. 114.

⁷ Bella, CM, Jobbágy, EG, Paruelo JM & Pinnock, S, 2006, 'Continental fire density patterns in South America', *Global Ecology and Biogeography*, vol. 15, pp. 192-199.

⁸ Van der Werf, GR, Randerson, JT, Giglio, L, Collatz, GJ, Kasibhatla, PS, Arellano, AF, Olsen, SC & Kasischke, ES, 2004, 'Continental-Scale Partitioning of Fire Emissions during the 1997 to 2001 El Niño/La Niña Period', *Science*, vol. 303, pp. 73-75.

⁹ Bowman, DMJS, Balch, JK, Artaxo, P, Bond, WJ, Carlson, JM, Cochrane, MA, D'Antonio, CM, DeFries, RS, Doyle, JC, Harrison, SP, Johnston, FH, Keeley, JE, Krawchuck, MA, Kull, CA, Marston, JB, Moritz, MA, Prentice, IC, Roos, CI, Scott, AC, Swetnam, TW, Van der Werf, GR & Pyne, SJ, Abril 2009, 'Fire in the Earth System.', *Science*, vol. 324, pp. 481-484.

¹⁰ Goldammer, JG, 'The Contribution of Remote Sensing to the Global Monitoring of Fires in Tropical and Subtropical Ecosystems', in: *Fire in Tropical Biota Ecosystem Processes and Global Challenges*, Springer-Verlag Berlin Heidelberg, pp. 337-368, New York.

¹¹ United Nations Environmental Programme & World Meteorological Organization, 2011, *Integrated Assessment of Black Carbon and Tropospheric Ozone*.

¹² Archibald, S, Roy, DP, van Wilgen, BW & Scholes, RJ, 2009, 'What limits fire? An examination of drivers of burnt area in Southern Africa', *Global Change Biology*, vol. 15, pp. 613-630.

¹³ Jin, H, 2010, 'Drivers of Global Wildfires – Statistical analyses' Master thesis, University of Lund, Sweden.

between the Cerrado and the Amazon. Forecasts associated to climate change scenarios furthermore point to an increased incidence of fire due not only to the longer dry seasons, but also mainly to the shorter intervals between extreme drought events, which are the greatest cause for most large fires in the tropics. The increased frequency of fire contributes to degradation processes and reduces the biomes' resilience to natural disturbances caused by extreme drought and fire.

110. The increased frequency of fires contributes to degradation and reduces the resilience of the biomes to natural disturbances caused by extreme drought and fire. The amounts of biomass and carbon contained in different vegetation components are key parameters for calculating the emission of particles and greenhouse gases from fires. It is important therefore to combine the monitoring of land cover with an early-warning system for forest fire prevention. In addition to their substantial negative environmental impacts, forest fires are very serious natural disasters that can affect the Brazilian population economically and socially. Monitoring and forest fire alert systems are in line with the prevention and mitigation of natural disasters policies proposed by the Government of Brazil, notably by the Risk Management and Disaster Response Program included in the Brazilian Multi-Year Plan 2012-2015 (PPA 2012-2015). This program seeks to establish a series of measures to reduce the impact of natural disasters, with forest fires included among the important subjects to be tackled.

111. The National Institute for Space Research (INPE) currently provides data on prescribed burning and forest fires. However, the available data is based on hotspots and does not permit burned area calculations, which would enable more precise and accurate calculation of associated GHGs emissions.

112. The most modern way of monitoring and warning of forest fires is through the use of fire forecasting models. These help to understand the main temporal, spatial and climatic factors that contribute to fires starting and can therefore be employed to minimize impacts locally. Using these forecasting models to predict flame-spread, risk maps can be generated at the pre-fire stage. These are vital tools in any early warning forest fire prevention system. The system can be coupled with the monitoring of vegetation cover and greenhouse gas emission models to provide estimates of emissions and to assess post-fire damage (e.g. the extent of the burned area, type of vegetation affected etc). Models designed to assess smoke-spread can also contribute to prior identification of the areas that could be damaged by fire, thus supporting decision-making process and possibly reducing the impact of such events.

c) Contribution to a transformational impact and co-benefits

113. The **overall objective** of the project is to contribute to the maintenance and enhancement of forest carbon stocks by producing geospatial and temporal information about deforestation, forest degradation and land use in the Cerrado, Caatinga and Pantanal biomes; and to the development of an early-warning system to prevent forest fires at national scale which will serve to inform and improve government efforts to reduce deforestation and degradation of the native vegetation cover. As such, the early-warning system and the monitoring system/platform must be designed by a joint effort of various institutions, with a multisensory and multiscale approach for various objectives and many institutions. Both systems will function as a command and control instruments but also generating information to guide land use planning and management.

114. The project has **three components**:

- a. **Implementation of an early-warning system for the prevention of forest fires** – to revise methods and develop suitable protocols for producing and disseminating information that can guide fire prevention and fighting activities. Information about the alarm system needs to be associated with training rural managers and landholders so that they can evaluate the risks (and losses) involved in using fire as a routine agricultural tool. Dissemination and training in the use of information related to fire alert systems will also help (i) to develop innovative instruments for reducing the risks of fire damage such as introducing forest insurance against fires, systems of

regional rural prevention services for combating fires and training for landowners; and (ii) to improve legislation and administrative processes for regulating the use of prescribed burnings and for attributing civil and criminal responsibility to landholders for fires caused by negligence, bad faith etc. Estimated FIP funds: 6 million.

- b. **Implementation of a system for monitoring the vegetation cover** – to revise current methods and develop suitable protocols to monitor vegetation cover and land use in the Cerrado, Caatinga and Pantanal biomes. To apply the methods thus developed, to periodically measure the changes in vegetation coverage and land use, and to analyze and promote dissemination of the results for the information of stakeholders. The Investment Plan is focused on the Cerrado, but the monitoring component will be a joint exercise in all 3 biomes owing to the structural similarities and major transition areas common to all of them. Estimated FIP funds: USD 9 million.
- c. **Implementation and management of the Project** – to support activities related to the management and implementation of the Project. A project Director will be responsible for overall project implementation. MCTI will be the main responsible to supervise technical and financial aspects of the project, and monitor project indicators. Estimated FIP funds: USD 0.65 million.

115. Implementing these two systems will involve the following stages:

- a. Characterizing deforestation polygons in the Cerrado, Pantanal and Caatinga biomes and the trajectory of deforested areas (on the whole converted to agricultural activities with frequent association of prescribed burning). This stage will be strongly interconnected with the information raised and systematized in Project 1.1 (based upon the CAR) and will enable large scale monitoring of activities associated to Project 1.2 (based upon the ABC Plan).
- b. Assessing the variability of above and underground biomass in the Cerrado biome as well as soil carbon stocks. Each step will be informed mainly by project 2.1, which foresees developing a forest inventory for the Cerrado biome. Annual monitoring data at different scales will in turn support regional scale interpretations of environmental information from the forest inventory.
- c. Developing the bases for a model of greenhouse gas emissions from deforestation in the Cerrado, Pantanal and Caatinga. Based on the premise that the mathematical emission model will aim to quantify the carbon content of vegetation, annual maps of new deforested areas will need to be combined with information on biomass distribution in the different types of vegetation of the Cerrado biome. Adapting the emission model to the Cerrado aims particularly to incorporate the different aspects of the deforestation process itself and its regional diversity.
- d. Characterizing the distribution pattern and incidence of prescribed burning and forest fires in Brazil through data produced in land use and natural plant cover mapping processes for each Brazilian biome and orbital data of burned areas. Emissions associated to forest fires will form a subcomponent of the emission model described above.
- e. Developing forest fire forecasting models based on meteorological, topographical and plant cover data. Integrating atmospheric circulation models at the adequate scale will additionally make it possible to identify the trajectory of forest fire smoke.
- f. Training senior managers and potential users of the systems developed, and implementing the warning system to prevent forest fires in the context of the National Center for Natural Disaster Monitoring and Alerts (CEMADEN-MCTI).

116. The main **co-benefits** of the project are:

- **environmental:** a) Increased conservation of biodiversity and carbon stocks in the remaining forest areas through the reduction of the frequency and intensity of forest fires, thereby resulting in increased integrity of the forest ecosystems; b) Protection of soil and water resources; c) Promotion of the maintenance of the natural fertility of the soil which suffers less degradation from the high temperatures produced by fires, thereby reducing costs arising from the use of agrochemicals; d) Detection of areas that are vulnerable to socio-economic and environmental pressures, thereby lessening the risks of fragmentation and degradation of the Protected Areas and indigenous territories.
- **socio-economic:** a) Enhanced capacity for land use planning and management in Brazil by generating environmental information at biome scale; b) Reduction of drivers of forest degradation and conservation of soil nutrients, thereby reducing the costs involved in restoring them in the Protected Areas and on private land, specially to small and medium farmers; c) Reduction of material and human losses resulting from uncontrolled fires and reduction of the risk of losses faced by conservation, agricultural, forest producers and public health; d) Updating legislation and policies related to controlled fires.
- **institutional:** a) Development and management of existing initiatives for conservation and sustainable development.

117. The **contribution of the project to a transformational impact** derives from a) the availability of timely official good quality information linked to the forest inventory and which helps to measure deforestation, forest degradation while enabling GHG emissions from these processes in the Cerrado, Caatinga and Pantanal biomes to be properly calculated; and b) the development of an early warning fire prevention alarm system for providing innovative public and private services and instruments to reduce forest fires and the damage caused by fires to communities, the environment and economic activities. The development of these systems will be based on a consortium of different institutions that will bring the multidisciplinary expertise needed for the implementation phase.

118. **The project focuses on** the Cerrado, Caatinga and Pantanal biomes, producing information by monitoring vegetation cover and land use similar to that already produced for the Amazon forest. In the case of the forest fire early-warning system, the focus of the project will be on a national scale, concentrating mainly on the three above-mentioned biomes and on the Amazon, given that these are the regions where forest fires are most frequent.

119. The initiatives for conservation and sustainable use of the Cerrado, Caatinga and Pantanal biomes will be benefited from access to information on vegetation cover and land use monitoring similar to that used for over 30 years in the Amazon forest. The information generated by this project will complement that obtained in the Amazon biome (and vice versa). The responses to different policies and instruments deployed in the forest and land-use sectors to tackle climate change depends on having an understanding of the dynamics of vegetation cover and land-use throughout the entire national territory so that the effective reduction of emissions can be obtained nationally. Moreover, Brazil, which is a leader in monitoring and early-warning systems for fire forecasting in different biomes and forest areas and for monitoring land use, should be in an excellent position to cooperate and transfer technology on a South-South basis.

d) Implementation readiness

120. In Brazil there are examples of public and private institutions engaged in initiatives for monitoring vegetation cover, land use and forest fires. Brazil has a number of highly qualified personnel working on land-use monitoring related to deforestation and fires. These initiatives do not yet however constitute an integrated system, incorporating both the monitoring of emissions caused by deforestation and fires with an early-warning system for the prevention of forest fires. The initiatives underway are concentrated primarily on the Amazon biome and involve little participation of state and municipal technical entities.

121. The DETER system aims to provide, on a fortnightly basis, information on new deforested areas in the Amazon, while PRODES has, since 1988, produced estimates of annual rates of deforestation in the Amazon. Both systems come under the aegis of the National Institute for Space Research (INPE-MCTI). The SAD system, for which the Amazon Institute for Man and the Environment (IMAZON) is responsible, was created as the first non-governmental system to monitor deforestation in near real-time.

122. More recently, the SEPED-MCTI created the National Center for Monitoring and Natural Disaster Alerts (CEMADEN) by Decree No. 7513 of 07/01/ 2011. The mandate of this centre is to develop civil defense protection activities in response to disaster alerts throughout the national territory. Its main aims are to prepare and publish studies as the basis for information needed to plan and promote responses to tackle natural disasters, develop scientific, technical and innovative capacity, create observation systems for monitoring purposes and devise computer models to improve disaster warning systems that are delivered to the National Center for Disaster and Risk Management (CENAD), which operates under the Ministry for National Integration. CEMADEN also provides information on related topics to the National Civil Defense System.

123. PREVFOGO (the National System for Preventing and Combating Forest Fires) operates under the aegis of the National Center for Prevention and Control of Forest Fires. It was created by IBAMA to establish prevention and control measures to tackle forest fires by hiring Firefighting and Prevention Brigades. These operate mainly in federal Protected Areas and in a number of municipal fire hotspots. Subsequently, with the aim of forming a solid information base about past fires, SISFOGO (National Fire Information System) was created. This is a geospatial technology instrument which assembles information related to fires affecting Protected Areas and municipal areas and is managed by PREVFOGO. Integrated Action Program, established by PREVFOGO, seeks, with support from state and municipal governments, to form partnerships with NGOs and different civil society actors with a direct interest in forest fire-related issues. In this context, the project will provide a more precise set of tools for preventing and controlling fires to the fore mentioned initiatives and landholders.

e) Potential national and international partners, including their REDD+ financial support

124. The main partners in project implementation are research institutions, the Federal and State governments, international partners and civil society.

f) Rationale for FIP financing

125. Given the environmental complexity of the various ecosystems and the institutional complexity of the different federal entities, FIP resources will have an important role to make the proposal viable and ensure good progress at every stage of its preparation and implementation (systems development, implementation, technical training, generation of new product, support for public policies etc).

126. The systems developed under this project are fundamental to monitor the implementation of the IP and contributes to guide the deployment of the activities related to CAR and ABC Plan, among other government programs.

127. In addition to FIP resources, Brazilian own financial resources could be mobilized as well as those of other partners, to co-finance the project, especially the full implementation phase of the systems developed.

g) Safeguards

128. The project will meet all the current safeguards required by Brazilian regulations as well as those of the IBRD, including the environmental and social safeguards under OP/BP 4.01. During the project design and analysis phases three workshop will be held to gauge the opinions and recommendations of interested parties. These will be taken into account when preparing the version of the project for submission to the Bank.

h) Financing Plan

129. The financial resources of the project are distributed (tentatively) as shown in the following table:

USD million			
FIP grant	FIP credit	Expected co-financing	TOTAL
9.25	0.00	6.50	15.75

130. The Government of Brazil's commitment to invest in initiatives related to the proposed Project is evidenced by the allocation of over USD 15.6 million for MCTI implementation, according to the 2012 Budget Law (LOA 2012).

i) Project preparation timetable

131. The main stages for preparing, approving and commencing execution of the project are estimated in the following timetable:

Activities
Analysis stage: commences with the presentation of the Consultative Letter to SEAIN, and ends with the evaluation of the financing proposal in the context of the COFIEIX.
Preparation stage: commences from the date of the publication of the COFIEIX recommendation in the Official Gazette (DOU), and ends with the receipt by the Government of Brazil of the Drafts of the Loan and Guarantee Contracts (in this case) submitted by the Financing Entity
Negotiating phase: commences from the date of receipt by the Government of Brazil of the draft contract, and finishes at the end of the negotiations between the Government of Brazil and the Financing Entity.
Signature phase by the parties: begins from the date of closure of the negotiations of the draft contract, and finishes with a formalization of the contract arrangements (i.e. signature) referring to the external credit operation. Formalization of contract subject to approval of the external credit operation by the Federal Senate.
Effective phase: commences from the date of the signature of the Loan and Guarantee Contracts (if this is the case), and finishes on the date of the first disbursement.
Execution phase: begins from the date of the first disbursement and finishes on the date planned for the last disbursement, in accordance with that set forth in the Loan Contract of the operation.

j) Request for project preparation grant

132. The project will request USD 100,000 to cover the analyses, consultations and prior technical meetings needed for defining the technical characteristics of the systems to be developed by the project.

Project Preparation Grant Request¹

FOREST INVESTMENT PROGRAM			
Project/Program Preparation Grant Request ²			
1. Country/Region:	Brazil	2. CIF Project ID#:	(Trustee will assign ID)
3. Project Title:	<i>Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover</i>		
4. Tentative FIP Funding Request (in USDmillion total) for Project ³ at the time of Investment Plan submission (concept stage)::	Grant: US\$9.25M	Loan: n/a	
5. Preparation Grant Request (in USD):	US\$100,000	MDB: IBRD	
6. National Project Focal Point:	Mercedes Bustamante, Ministry of Science, Technology and Innovation (MCTI)		
7. National Executing Agency (project/program):	Ministry Science, Technology and Innovation		
8. MDB FIP Focal Point and Project/Program Task Team Leader (TTL):	Headquarters FIP Focal Point: Gerhard Dieterle	Task Team Leader: Garo Batmanian	
<p>9. Description of activities covered by the preparation grant:</p> <p>The overall objective of the project is to contribute to the maintenance and enhancement of forest carbon stocks by producing geospatial and temporal information about deforestation, forest degradation and land use in the Cerrado, Caatinga and Pantanal biomes; and to the development of an early-warning system to prevent forest fires at national scale which will serve to inform and improve government efforts to reduce deforestation and degradation of the native vegetation cover.</p> <p>The project preparation grant will be used to cover the following activities:</p> <ol style="list-style-type: none"> 1) Carry out the social and environmental assessment necessary as part of the IBRD project preparation cycle; 2) Consultation with key stakeholders 3) Studies to develop specific targets, monitoring framework and gathering of the baseline data, based on the overall IP framework. 4) Development of institutional mechanism to develop a decentralized monitoring system under the coordination of the MCTI 5) Development of a project management plan. 			

¹ To be annexed to the Investment Plan.

² A separate template needs to be presented for each project and program preparation grant request listed in the Investment Plan.

³ Including the preparation grant request.

10. Outputs:	
Deliverable	Timeline
Institutional mechanism to develop a decentralized monitoring system under the coordination of the MCTI defined	three months after IP approval
Detailed project description prepared satisfactory to the IBRD	four months after IP approval
11. Budget (indicative):	
Expenditures ⁴	Amount (USD) - estimates
Consultants	55,000
Equipment	
Workshops/seminars	25,000
Travel/transportation	10,000
Others (admin costs/operational cost)	10,000
Contingencies (max. 10%)	
Total Cost	100,000
Other contributions:	
• Government	
• MDB	
• Private Sector	
• Others (please specify)	
<p>12. Timeframe (tentative)</p> <p>Final Joint Mission: February 17, 2012 Investment Plan for FIP Sub-Committee Endorsement: May 4, 2012 Grant Request for MDB FIP Committee Approval: May 4, 2012 Submission of pre-appraisal document for FIP Sub-Committee Approval: five months after IP approval Expected Board/MDB Management⁵ approval date: two months after pre-appraisal</p>	
<p>13. Other Partners involved in project design and implementation⁶: Federal and State environmental agencies, research institutions and universities involved in monitoring of vegetation cover and/or fire prevention.</p>	
<p>14. If applicable, explanation for why the grant is MDB executed: The grant will be recipient-executed</p>	
<p>15. Implementation Arrangements (incl. procurement of goods and services): will follow the policies and procedures of IBRD</p>	

⁴ These expenditure categories may be adjusted during project preparation according to emerging needs.

⁵ In some cases activities will not require MDB Board approval

⁶ Other local, national and international partners expected to be involved in design and implementation of the project.

ANNEX 2 – PLAN FOR INVOLVING AND CONSULTING STAKEHOLDERS

1. The preparation of the Brazil Investment Plan for the FIP included involving and consulting stakeholders.
2. Arrangements for involvement and consultation process were coordinated by the Ministry of the Environment (MMA), with participation of the Ministries of Agriculture, Livestock and Food Supply (MAPA), of Science, Technology and Innovation (MCTI), of Finance (MF), of Justice (through the National Indigenous Foundation – FUNAI) and the Brazilian Forest Service (SFB), and support of the Brazilian Biodiversity Fund – FUNBIO, through the IP preparation grant.
3. The purpose of the involvement and consultation process was to:
 - i. publicize the Brazil Investment Plan to interested parties in order to allow their appropriation;
 - ii. involve the main interested actors in the design of the Investment Plan, ensuring their effective participation at the implementation stage;
 - iii. clarify the "investment proposal" in order to align expectations and to keep the interested parties informed of the proposed investments.
4. The arrangements consisted of the following:
 - i. **Information sharing session** with stakeholders **during the Scoping Mission** (May 2011);
 - ii. **Information workshops** on the FIP, also covering the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities (November and December 2011);
 - iii. **Public consultation through the Internet** on the Brazil Investment Plan between 25th January and 5th March 2012, using the websites of the governmental institutions involved;
 - iv. **Participatory consultation workshop** (7th February 2012);
 - v. **Sessions with stakeholders during the Joint Mission (15th February 2012)**
 - a. **Information sharing session with indigenous peoples and traditional communities** (15th February 2012 – morning), and
 - b. **Discussion session on results from the Participatory consultation workshop** (15th February 2012 – afternoon);
 - vi. **Meetings with stakeholders** (March 2012), including high-level dialogue with the **Forum of State Environment Secretaries in the Cerrado Biome**.
5. Details of these stages are as follows:

Information sharing session during the Scoping Mission

6. During the Scoping Mission of the Brazil Investment Plan for the FIP, in mid-2011, the FIP was presented to representatives of networks of social and environmental movements and members of the private sector interested in the program. This session initiated the process of participation and follow-up on the preparation of the Brazil Investment Plan.

Information workshops

7. In November and December 2011, a number of information workshops were held with parties interested in the goals of the FIP and in the areas identified during the Scoping Mission as being a potential focus for the Brazil Investment Plan.

Table A2.1 – Information workshops on the FIP

Date	Venue/Event	Attendees	Federal Government Representatives
05/26/2011 (morning)	Presentation of the FIP during the Scoping Mission, in Brasilia-DF	Indigenous peoples, traditional communities, private sector, NGOs and social movements (30 participants)	MMA, MF, SFB
11/22/2011 (morning)	Workshop on safeguards for REDD+, in Brasilia-DF	Indigenous peoples, traditional communities, state environment organs, NGOs private sector, social movements. (41 participants)	MMA, MF, FUNAI, SFB
11/22/2011 (afternoon)	Meeting to inform on the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities, in Brasilia-DF	Indigenous peoples and traditional communities (17 participants)	FUNAI, MF, MMA
11/28/2011 (afternoon)	Meeting of the National Commission for the Sustainable Cerrado Program (CONACER), in Brasilia-DF	Indigenous peoples, traditional communities, state environment organs, private sector, NGOs, social movements. (33 participants)	ANA, FUNAI, MCTI, MDS, MF, MJ, MMA, SFB
12/07/ 2011 (afternoon)	24 th Ordinary Meeting of the Public Forests Management Commission (CGFLOP), in Brasilia-DF	Indigenous peoples, traditional communities, state environment organs, private sector, NGOs, social movements. (27 participants)	Embrapa, MCTI, MD, MF, MMA, MPOG, SFB
12/14/ 2011 (afternoon)	Meeting of the Working Group of the ABC Plan, in Brasilia-DF	Private sector, NGOs, social movements. (14 participants)	Casa Civil, Embrapa, MAPA, MF MMA, MCT, SFB

Table A2.2 – Information Workshop – Participants⁷, Sector and Gender

	Participants	
	Quantity	Percentage (%)
Sector		
Civil society	46	31.7
Academia	3	2.1
Private sector	15	10.3
Government (federal, state and municipal levels)	60	41.4
Indigenous Peoples	9	6.2
Traditional Communities	1	0.7
MDBs	11	7.6
Gender		
Male	84	57.9
Female	61	42.1
TOTAL	145	100.0

⁷ In order to avoid double counting, participants in the *Meeting to inform on the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities* were not included. They attended the information session on the Brazil Investment Plan for FIP during the *Workshop on safeguards for REDD+*.

Public consultation through the Internet

8. The first version of the Brazil Investment Plan for the FIP was made available for public consultation from 25th January 2012 to 5th March 2012⁸ on the websites of the MAPA⁹, MCTI¹⁰, MF¹¹, MMA¹², SFB¹³, and on the REDD+ Portal¹⁴, for the purpose of obtaining contributions from Brazilian society for the elaboration and implementation of the Plan.

9. All Brazilian citizens, organized stakeholders, private sector, NGOs and public authorities of Brazil were welcome to participate in the consultation. Notification was disseminated through e-mail and also publicized through press coverage (*O Estado de São Paulo* newspaper, *Observatório do REDD* website, as well as press release by governmental institutions).

10. The consultation was based on a questionnaire consisting of six open questions about the overall strategy of investment, the activities proposed and synergies identified on the Brazil Investment Plan.

11. By the end of the consultation period, 79 hits were registered, of which 19 corresponded to full responses¹⁵. The table below summarizes the sector and work level¹⁶ of the participants from whom contributions were received:

Table A2.3 – Public Consultation through the Internet – Participants, Sector and Work Level

	Participants	
	Quantity	Percentage (%)
Sector		
Civil society	7	36.8
Academia	3	15.8
Private sector	2	10.5
Government (federal, state and municipal levels)	2	10.5
Indigenous Peoples	1	5.3
Traditional Communities	0	0
Others	4	21.1%
Work Level		
Local	4	21.1
Regional	5	26.3
National	8	42.1
International	2	10.5
TOTAL	19	100.0

⁸ Approximately 40 days for internet consultation.

⁹ www.agricultura.gov.br

¹⁰ www.mct.gov.br

¹¹ www.fazenda.gov.br/sain

¹² www.mma.gov.br

¹³ www.sfb.gov.br

¹⁴ The portal managed by the Ministry of the Environment can be found at www.florestal.gov.br/redd.

¹⁵ Registration was completed meanwhile responses were not provided or simply reiterated support to the Plan.

¹⁶ In the interest of transparency, organisations and individuals who wished to submit comments in the context of the public consultation were asked to provide information about what sector they represent and their work level.

12. All contributions received were read and compiled. After systematization, they were processed by the proponents of the Investment Plan activities and taken into consideration during the review of the second draft of the IP. **The applicable responses and possible conclusions will be disseminated on the relevant websites.**

Participatory consultation workshop (February 2012)

13. The GoB was keen to ensure that everyone with an interest had the opportunity to express views and opinions on the proposed Investment Plan. So, in addition to the online submission of comments, an in-person consultation meeting was held to present the Plan and to answer any questions stakeholders had.

14. A public consultation meeting was held in Brasilia on February 7th, 2012. The Government of Brazil sought to involve as many representatives of the public and private sectors in the in-person consultation as possible. In-person consultation involved 52 participants, including 31 representatives from various governmental agencies, including state and municipal government, 12 representatives from civil society, 5 from academia, 3 from the private sector and 1 representative from traditional communities.

Table A2.4 – Participatory Consultation Workshop – Participants, Sector and Gender

	Participants	
	Quantity	Percentage (%)
Sector		
Civil society	12	23.1
Academia	5	9.6
Private sector	3	5.8
Government (federal, state and municipal levels)	31	59.6
Indigenous Peoples	0	0
Traditional Communities	1	1.9
Gender		
Male	34	65.4
Female	18	34.6
TOTAL	52	100.0

15. Aiming at better inserting the participants in discussions regarding the Brazilian Investment Plan, the public consultation involved presentations along the following lines:

- i. Informative part - concept of mitigation and adaptation to climate change, actions to protect forests and other resources; contextualization of the FIP.
- ii. Consultative part - the main investment lines and the proposals for action to be taken under the Investment Plan
- iii. Consultative part – opportunities for receiving criticism, answering questions and responding to proposals by interested parties.

16. After presentations, discussions were held using the *World Café* group-discussion method, which values both the participative process and the groups’ results. Participants were organized into groups with representatives from different sectors (government, academia, civil society) and they discussed: (1) strengths of the plan; (2) gaps of the plan; and (3) suggestions to improve the plan. Groups presented the main points and discussed them in plenary.

17. Resulting from the in-person consultation, *in loco* conclusions as well as criticisms, doubts and proposals not approved *in loco* were compiled into a summary report, further distributed by e-mail to participants and made available on the REDD+ portal website.

Table A2.5 – Summary description of the activities

Venue	Brasilia-DF
Target audience	<ol style="list-style-type: none"> 1. Academia and research institutions 2. Private sector 3. Farmers 4. State and Municipal governments representatives 5. Representatives from NGOs and social movements 6. Other Interested Parties.
Methodology	<ol style="list-style-type: none"> 1. Presentation on the legal and public policy frameworks relevant to climate change in Brazil; 2. Presentation on the FIP and its development from the public policy viewpoint; 3. Presentation of the main themes as set out in the Investment Plan ; 4. Open session for clarifications; 5. Discussion session among participants (<i>World cafe</i>) 6. Plenary: discussion, comments and suggestions 7. Evaluation 8. Open session for suggestions
Expected results	Interested parties and direct beneficiaries informed about the proposed investments and mobilized to implement the Plan;
Documentation	<ol style="list-style-type: none"> 1. Record, attendance list and contact details 2. Summary report to include suggestions, whether approved or not, for the Investment Plan.
Date	February 7 th , 2012
Duration	8 hours

Sessions with stakeholders during the Joint Mission (15th February 2012)

18. During the FIP Joint Mission on the Brazil Investment Plan, which took place between 13th and 17th February 2012, sessions were held with interested parties, aiming at broadening involvement of relevant actors and promoting an in-depth discussion on the outcomes of the participatory consultation meeting.

Information sharing session with indigenous peoples and traditional communities

19. A specific session was held with indigenous peoples and traditional communities in the morning of February 15th. Presentations on the Brazil Investment Plan were followed by discussion and clarifications.

20. Although this session was targeted to representatives of indigenous peoples and traditional communities, it was open to other interested parties. In total, there were 33 participants, including 5 representatives from major indigenous organizations, 3 representatives from local communities' organizations, 5 representatives from civil society, 13 representatives from the federal government, 1 from private sector, 4 from Multilateral Development Banks and 2 potential development partners.

21. The indigenous peoples and traditional communities were involved in the FIP discussion, requested clarification, and provided criticism and suggestions. In addition, indigenous representatives decided to internalize the debate in their communities and, in liaison with FUNAI, intend to provide their views on the Plan and its design process through a written document. It may also include issues that were not addressed during the meeting related to the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities.

Table A2.5 – Information Sharing Session with Indigenous Peoples and Traditional Communities during the Joint Mission – Participants, Sector and Gender

	Participants	
	Quantity	Percentage (%)
Sector		
Civil society	5	15.6
Academia	0	0
Private sector	1	3.0
Government (federal, state and municipal levels)	13	39.4
Indigenous Peoples	5	15.6
Traditional Communities	3	9.1
MDBs	4	12.1
Potential development partners	2	6.1
Gender		
Male	18	54.5
Female	15	45.5
TOTAL	33	100.0

Discussion session on results from the Participatory consultation workshop

22. In the afternoon of February 15th, there was a discussion session with stakeholders (not preselected and open to interested individuals) on the outcomes of the public consultation meeting occurred on February 7th.

23. Participants validated the results of the participatory consultation workshop. Afterwards they were divided into two groups to cover major gaps raised during the referred meeting: (1) co-benefits, and (2) management and monitoring.

24. There were 39 participants, including 17 representatives from the federal and state government, 7 from civil society, 5 from indigenous peoples, 5 from private sector, 4 from Multilateral Development Banks and 1 potential development partner (DfID).

Table A2.6 – Discussion Session on Results from the Participatory Consultation Workshop during the Joint Mission – Participants, Sector and Gender

	Participants	
	Quantity	Percentage (%)
Sector		
Civil society	7	17.5
Academia	0	0
Private sector	5	12.5
Government (federal and state levels)	17	45.0
Indigenous Peoples	5	12.5
Traditional Communities	0	0
MDBs	4	10.0
Potential development partners	1	2.5
Gender		
Male	24	61.5
Female	15	38.5
TOTAL	39	100.0

Meetings with stakeholders

25. A high level discussion of the Government of Brazil with the *Forum of Environment Secretaries in the Cerrado Biome*¹⁷ occurred on March 6th, 2012, during the Forum's Third Meeting in Salvador, Bahia State. Thirteen states attended the meeting, plus representatives of Federal Government such as the Vice-Minister of Environment.

26. The Brazil Investment Plan was welcomed and State environmental agencies are mobilized to design and implement the activities of the Investment Plan in due course.

Main outcomes from consultation process

27. Throughout the process of consultation, various questions, comments, suggestions, criticisms and compliments were made. The main points raised during the process are listed below.

- Geographic scope – emphasis on the Cerrado biome (savannah) was taken as positive, especially considering the great pressure to which the biome is exposed to and the low record of investments targeting forests and climate in that area.
- Synergies – the inter-ministerial coordination and synergy among the projects proposed, and these with other existing policies and programs, was considered positive given the possibility of strengthening actions that have already been initiated.
- Rural Environmental Registry – its selection as one of the projects of the Investment Plan was considered by many as of strategic importance and with high potential of reinforcing the synergies with other programs, instruments and with environmental regulations.
- Low Carbon Emission Agriculture Plan (ABC Plan) – was also considered by the participants a good choice for inclusion in the Investment Plan. A major recommendation was to ensure the co-benefits arising as a result of the Plan, and to promote access to ABC Program credit, especially to the settlers, small farmers and traditional communities. Some suggestions and possibilities raised, and that may be detailed in the next steps, concern the synergy with the Regional Sustainable Development Strategy (RDS) aiming to increase dialogue with PRONAF.
- Development of the National Forest Inventory – was considered important and urgent. Activity should seek to benefit indigenous territories and traditional communities.
- Early-warning system for preventing forest fires – was also considered important in terms of scope and as a crosscutting issue. Recommendations were made on the need for training, involvement of local stakeholders, closer dialogue with research centers in Cerrado, and preparation of the ongoing plan for monitoring the biome as a whole.
- Development of the proposal – need for greater detail in various parts of the Plan regarding mechanisms for managing, scheduling and financial arrangements, scheduling and monitoring activities, the possibility of allocating resources for research, strategies to guarantee the sustainability of the benefits generated, among others. Some representatives raised the need for new financing mechanisms for forest activities.

¹⁷ The Forum, that was created in 2011, comprises authorities from 13 states. It deals with climate change policy in the states, investment in sustainable consumption and combating deforestation and forest fires. The following are the states represented by their Environment Secretaries: Tocantins, Federal District, Maranhão, Pará, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Piauí, São Paulo, Bahia, Paraná, Goiás and Rondônia.

- Most of these points raised will be addressed with greater refinement in the stage of project design.
- Participation – on the process of consultation different opinions were expressed. There was praise from those who considered it satisfactory and effective, and there was criticism on the low representation of specific sectors (especially traditional communities and the private sector).
- Audience and scope – a criticism of the Investment Plan was the exclusion of projects specifically geared to the Protected Areas (PAs), Indigenous Lands (ILs), traditional peoples and small farmers. In addition, the absence of the Ministries of Social Development (MDS) and of Agrarian Development (MDA) was noted.
 - Projects in Thematic Area 2 (Production and Management of Forest Information) shall generate (co-) benefits to all and for the conservation of protected areas and indigenous lands as well, once it is essential to their preservation and decrease in pressure on the surrounding areas. In this sense, one of the criteria for prioritizing areas for implementation of activities related to Thematic Area 1 (Management and Use of previously anthropized areas) shall be distance from indigenous lands and PAs.
 - Involvement of MDS and MDA will be further sought during the stage of project design.
 - It is also worth noting that, regarding indigenous peoples and traditional communities, discussions will follow on the Dedicated Grant Mechanism.
- Activities – It was possible to get rich and relevant comments, which, as far as possible were considered in the current proposal or will be considered during the preparation of projects. Some gaps can be remedied with the suggestions received; others, however, may prove impractical due to limited resources.

28. A summary of the contributions received throughout the consultation process and a response to the main points raised was available by March, 2012.

Next steps

29. Interested parties involvement will continue during the design stage of the specific projects according to the procedures laid down for project preparation adopted by the respective Multilateral Development Banks (MDBs).

ANNEX 3 – DEDICATED GRANT MECHANISM FOR INDIGENOUS PEOPLES AND LOCAL COMMUNITIES IN THE CONTEXT OF THE FOREST INVESTMENT PROGRAM

Introduction

1. This annex contains information about how the funds of the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities (DGM) can make a complementary contribution to the Brazil Investment Plan, by enhancing indigenous peoples and traditional communities' (IPTCs) capacity, supporting their specific initiatives, and strengthening their participation in FIP and other REDD+ processes. The following issues are addressed: (a) a brief characterization of IPTCs in Brazil and the main threats and challenges they face to maintain traditional lifestyles and more sustainable livelihoods; (b) a summary analysis of selected experiences IPTCs have had with environmental and land management projects, programs and policies, which emphasizes their key lessons for designing the Brazil DGM; (c) an assessment of the potential role of DGM in Brazil; and, finally, (d) a proposal of a plan of consultation with IPTCs for the final design of Brazil's DGM.

Indigenous Peoples and Traditional Communities in Brazil

2. Traditional communities are self-identified groups whose productive systems are characterized by the sustainable use of natural resources for their cultural, social, religious, ancestral and economic perpetuation. Amongst the traditional communities of Brazil there are: indigenous peoples, *quilombola*¹, extractive communities, artisanal fishermen, and others. Estimates suggest that traditional communities (including Indigenous Peoples) house about five million people and occupy ¼ of the country's area.

3. There are at least 238 Indigenous Peoples in Brazil, speaking about 180 native tongues which belong to 18 different linguistic families. They are present in all but two states of the federation (Piauí and Rio Grande do Norte) and live in about 670 Indigenous Lands in Brazil. Indigenous Lands comprise almost 13 percent of the national territory, 21 percent of the Brazilian Amazon and 1.3 percent of other regions. They account for 0.4 percent of the Brazilian population (about 818 thousand people). About 60 percent of the Indigenous Peoples live in the Amazon. The Cerrado houses 38 Indigenous Peoples, which occupy about 4.4 percent of the biome.

4. Throughout Brazil, IPTCs continue to face land use conflicts that have depleted the natural resources, endangered their health and security as well as their ability to maintain traditional lifestyles and more sustainable livelihoods. Settlers, ranchers, wildcat miners, loggers, fishermen and hunters have caused considerable environmental damage to Indigenous Lands and traditional communities. Deleterious impacts occur by both seizing and restricting territories traditionally occupied and exploited by IPTCs or by resources exploitation and land-use in areas surrounding traditional communities and indigenous lands.

Brazil Legal and Institutional framework

5. Brazil's Federal Constitution recognizes the social organization, costumes, languages, beliefs and traditions of indigenous peoples and their ancient rights to occupy their homelands. The state is responsible for demarcating and protecting these areas and respecting Indigenous Lands. The Constitution also stipulates that traditional Indigenous Lands are those which are inhabited permanently, used for productive activities and which are vital for conserving the environmental resources necessary to Indigenous Peoples welfare and their physical and cultural

¹ *Quilombolas* are communities that represent the descendant of runaway slave communities from Brazil's colonial period or rural Afro descendant communities that remained on lands given to them by former slave owners. These people have maintained sociocultural distinctiveness in the practice of their unique lifestyles and sharing of a common territory. There are more than 1,820 *quilombola* recognized communities spread all over the country.

reproduction, in accordance with their traditions and customs. According to the Constitution the Indigenous Lands are to be permanently occupied by indigenous peoples who can enjoy exclusive use of the existing soils, rivers and lakes situated thereon. Law No. 6,001 of 19th December 1973 (Statute of the Indigenous) regulates the legal situation of indigenous peoples and defines principles and civil and political rights with the aim of preserving indigenous culture, social organization and physical reproduction. Besides, Brazil has recognized, signed and/or ratified all major international agreements and treaties regarding the rights of indigenous peoples.

6. To ensure compliance with Brazil's policies towards the indigenous population, Law No. 5,371/67 created, in 1967, the National Indigenous Foundation (FUNAI). This is a federal entity responsible for a wide spectrum of issues dealing with the indigenous population, as defined in Decree No. 7,056/2009.

7. The legal and institutional framework dedicated to the protection and promotion of the rights of Brazilian indigenous peoples acknowledges that environmental conservation is a fundamental element for ensuring the welfare and physical/cultural reproduction of the latter. These rules have been extended to other groups which, while they possess their own different sociocultural and historic characteristics, they also share the indigenous peoples' practice of promoting sustainable use of natural resources.

8. To ensure protection of the communities, the National Protected Areas System (SNUC) has earmarked specific spaces defined as sustainable use conservation units. These areas, covering millions of hectares with vast environmental assets, are home to a wide variety of local communities and self-identified traditional groups.

9. The National Policy for the Sustainable Development of Traditional Peoples and Communities (PNPCT), approved by Decree No. 6,040 of 7th February 2007, reaffirms the importance of valuing and respecting socio-environmental diversity. Its main goal is to promote the sustainable development of traditional peoples and communities and family smallholders (PCTAFs), with emphasis on the recognition, strengthening and assurance of their territorial, social, environmental, economic and cultural rights, while respecting and valuing indigenous identity, forms of organization and institutions. The specific goal of the PNPCT related to productive inclusion has been given concrete expression in the National Plan to Promote Socio-Biodiversity Product-Chains (PNPSB). The purpose of this plan is to develop, through an agenda agreed with the Federative States and civil society, integrated actions for the promotion and strengthening of chains of products arising from socio-biodiversity, by generating sustainable markets for such products. Actions planned include technical assistance, upgrading product quality, good management practices, infrastructure, logistics, support for businesses to access public policies, institutional and special markets, fairs, and the development of local skills with a view to (in the majority of cases) helping to conserve forest assets used by the sectors of this population.

Recent experiences in support of IPTCs' Environmental and Land Management

10. Brazil has substantial experience with grants for environmental management projects in traditional communities and indigenous lands. The Indigenous Lands Project (PPTAL), the Demonstration Projects (PDA), and a number of other programs within the context of the Pilot Program for the Protection of the Tropical Forests of Brazil (PPG7) have contributed significantly to building expertise related to territorial environmental management. These programs' outstanding results and key lessons should be considered on the design of Brazil DGM.

11. Indigenous Lands Project (PPTAL) – The objectives of this project were threefold: (a) regularizing selected indigenous areas in the Legal Amazon; (b) improving the protection of indigenous peoples and lands by developing and implementing environmentally sustainable community based activities; and (c) strengthening IP protection and IL territorial management by targeted capacity building and studies. The project identified 60 ILs and demarcated 92 lands (87 of them have received Presidential Decrees and 59 have been fully registered in local and federal registries). Thus, the project regularized more than 40 million hectares of indigenous lands in the

Amazon region. The bottom-up approach to develop and support local initiatives so indigenous communities could monitor and control their lands benefited 60 ILs and about 45,000 persons. It was one of most successful indigenous land regularization programs in the world and pioneered by increasing indigenous participation and control in the process of regularizing, protecting and managing their lands.²

12. Demonstration Projects (PDA) – The objectives of this project were related with the development, adaptation and dissemination of environmentally, economically and socially sustainable systems of natural resource management and conservation by traditional communities through a small grants program and the strengthening of the capacity of local populations to plan and implement such activities. It introduced a “bottom-up” approach to natural resource management and funded initiatives by rural communities, NGOs and municipal governments in the Amazon and the Atlantic Forest regions. The participation of civil society, traditional communities and stakeholders was its main guiding principle. It was conceived as a means for overcoming destructive patterns of natural resource use, duly recognizing traditional forest-related knowledge, and building constituencies for sustainable development. Coordinated by a Technical Secretariat (ST) in the Ministry of Environment (MMA), PDA included an Executive Committee – composed by an equal number of civil society and government representatives – that set overall guidelines for the project and approved sub-projects for funding. A total of 194 projects were implemented in the Amazon and Atlantic Forest biome, but represented only 19% of all proposals submitted.³ Beneficiary communities effectively benefit economically from adopting new land-use practices and diversifying their production systems. Organizational strengthening of communities was a major impact of the project.⁴ Communities generally advanced in terms of their ability to deal with the outside world, increasing their bargaining power, self-esteem and technical, administrative and even political skills. However, some design shortcomings were also identified: (a) project’s and community subprojects’ implementation periods were too short to achieve the intended objectives, testing and developing innovative practices with the complex social, entrepreneurial and agronomic processes that existed within communities; (b) the *ceiling for sub-project grants* (USD 210,000) was too high to handle for groups that had never administered any such grants; and (c) the quality of community subprojects suffered as (i) *in loco pre-appraisal* of all sub-projects was not mandatory, (ii) resources to technical assistance for both support subproject design and community mobilization and internal organization were not properly allocated, (iii) “business plans” or feasibility studies were not required for the proposals, and (iv) funding of *working capital* for sub-projects with productive and marketing objectives was not allowed due to insufficient appreciation of the difficulties of first-of-a kind, high-risk community-based projects to access credit and became a frequent bottleneck for processing and marketing by associations and cooperatives without access to credit sources and lacking in entrepreneurial abilities.⁵

13. An ongoing relevant project is the GEF supported *Catalyzing the contribution of Indigenous Lands to the conservation of Brazil’s forest ecosystems*, executed by the Ministry of Environment and FUNAI. The objective of this project is to consolidate Indigenous Lands (ILs) as protected areas (PAs) and therefore an integral part of the National Protected Area Plan. To achieve this goal there are three main approaches: (a) developing tools and strategies to inform policy and recognize ILs as PAs; (b) modeling and testing approaches that increase the management effectiveness of conservation set-asides in ILs; and (c) removing barriers that

² The World Bank, *Implementation Completion and Results Report (MULT-21953): Indigenous Lands Project*, Jan. 5, 2007.

³ The large percentage of rejections (81%) may be a reflection of the lack of technical assistance to proposing communities and NGOs and of the hasty preparation of proposals in order to respond swiftly to the opportunity of receiving a grant.

⁴ Significant improvements in management, social organization, the role of women and political representation were found in more than 90% of the sub-projects evaluated.

⁵ The World Bank, *Implementation Completion Report (TF-26659/TF-26655): RF Demonstration Projects – PDA*, Sept 20, 2004.

currently hamper sustainable use strategies and, then, increasing access to markets and determining sustainability thresholds appropriate for each forest type. The last two approaches are being pilot tested in ILs selected in full consultation with Indigenous Peoples according to two criteria: they must be located in areas of high priority for forest biodiversity conservation and all land regularization process has been completed. At least one IL will be selected per biome to test approaches appropriate for the ecological peculiarities of each forest type and to deliver global benefits in each of Brazil forest biomes.⁶

Lessons Learned

14. **Key lessons learned** from these recent experiences with environmental and land management by Indigenous Peoples and local communities are:

- A participatory approach is essential for positive outcomes. To be successful this approach must: (i) incorporate a strong commitment to grassroots empowerment and social accountability, (ii) ensure that IPTCs are actively involved in project development and implementation, and (iii) ensure social accountability and transparency by establishing active and empowered advisory and oversight commissions.
- The objectives and design of a sub-project should be based on the community's needs and demands, so as to guarantee ownership and identification rather than by technical assistance agents or sponsoring NGOs, who make choices that did not meet community needs.
- When working with diverse IPTCs, it is critical to work with and strengthen indigenous and community organizations, respecting their culturally defined decision-making mechanisms and without imposing pre-established packages, timing or modalities of work that are foreign to the communities.
- Technical assistance should be planned for and made accessible early on and must not ignore local traditional knowledge, women's and minority groups' concerns. In other words, technical assistance should respect the clients and help people learn from their own experience and shall concentrate more on giving communities choices as to how to achieve objectives and refrain from deciding for them. This type of technical assistance requires skills in participatory methodologies.

Potential role of the DGM in Brazil

Basic Guiding Principles

15. The guiding principles of the DGM must be consistent with the Brazilian legal and institutional frameworks and the lessons learned with recent experiences in environmental and land management by Indigenous Peoples and Traditional Communities in Brazil. Thus, the following principles will guide the program through preparation and implementation:

- The Government of Brazil's agencies responsible for policies towards IPTCs should play an active role in the context of this grant mechanism, in order to ensure consistency and promote synergies with related public policies;
- Participation in decision-making process by indigenous peoples and traditional communities who, as primary stakeholders, will be involved through broad and transparent consultation in all key decisions during preparation, implementation, monitoring and evaluation of the DGM;
- Transparency and accountability in selection of implementing partners, members of governing bodies and beneficiaries;

⁶ GEF, *Catalyzing the contribution of Indigenous Lands to the Conservation of Brazil's forest ecosystems: Project Identification Form*, Sept 7, 2007.

- Flexibility, efficiency and administrative simplicity to enable easy, streamlined and fast-track access of grants by grassroots indigenous peoples and local communities; and
- Social inclusiveness and equity by outreaching and ensuring the participation and the protection of women, children, elders, and other vulnerable people.

Representative forums and Governance Body

16. An intense process of organization of IPTCs' representative instances to deal with and take part in policy decision-making has been taking place. Since the 1990s, hundreds of community-based organizations have been created; regional and national social networks have been convened. In addition, a number of representative forums have been assembled by the government at state, regional and national levels for participation of those groups. The National Commission on Traditional Peoples and Communities (CNPCT) and the National Indigenous Policy Commission (CNPI) embrace a highly diverse membership and may serve as natural interlocutors for elaborating the grant mechanism for IPTCs. Additionally, in the Cerrado, other two significant sociocultural networks must be emphasized: the Cerrado Network (*Rede Cerrado*)⁷ and the Cerrado Indigenous Peoples Movement (MOPIC).⁸

17. These forums should be considered for the composition of the *National Steering Committee* (NSC) for the DGM, "in order to avoid unnecessary institutional proliferation".

Target Population and Territorial profile

18. The main beneficiaries of Brazil DGM are indigenous peoples and traditional communities who include all social groups who self-assert a distinctive cultural identity, hold knowledge and practices transferred from a generation to the next by means of tradition, keep distinctive forms of social organization and cultural beliefs and norms, occupy traditionally lands and territories, and rely on distinctive productive systems and low impact natural resource management strategies for their cultural, social, religious, ancestral and economic reproduction.

19. The number and diversity of IPTCs in Brazil represents a key challenge of the Brazil DGM. On the one hand, the large size, the ecological/economic importance, and the number of IPTCs housed by the Cerrado as well as the availability of other sources of funding for more sustainable land and environmental management by IPTCs in the Amazon and Atlantic forests add to render worthy to consider avoiding the use of DGM resources to IPTCs all over the country and enhancing the potential synergies between FIP and DGM, by focusing the DGM on the Cerrado biome. On the other, as training and capacity building, one of the scope of actions of the DGM, entails economies of scale it may be worthy to consider providing it to IPTCs from a wider range. Also, challenges faced by IPTCs to access the resources of other available sources of funding, due to inadequate institutional capacity and lack of technical assistance available to prepare good quality projects, suggest that it may also be worthy to consider a twofold approach for the DGM. One focusing on the priority given to the Cerrado biome and another nation-wide component for capacity-building and technical assistance. Throughout DGM preparation process these and other options will be considered and properly consulted with IPTCs and other key stakeholders.

Potential Actions

20. Indigenous Lands and other territories inhabited by traditional communities consist of large natural areas which contribute significantly to environmental conservation and record very low or zero deforestation rates, comparable only to the Strict Protection Protected Areas. Due to

⁷ *Rede Cerrado* was created in 1992 and counts with 79 affiliated members and convenes nearly 300 NGOs/CSOs, including Indigenous organizations, *quilombola* communities, family farmers organizations and representatives of a plethora of traditional communities.

⁸ *Mobilização dos Povos Indígenas do Cerrado – MOPIC* was constituted in 2006; at least 30 Indigenous Peoples take part on its activities, which address issues of indigenous representation and articulation with governmental and non-governmental agencies, national and international entities, sustainability and land tenure rights, and cultural promotion.

the high carbon stock present in its forests, the REDD+ actions have become a key theme in discussions among the indigenous peoples, not only on account of the potential opportunities that this offers in terms of conserving Indigenous Lands and traditional communities lifestyles, but also taking into account the potential risks.

21. According to FUNAI, useful guidelines for REDD+ initiatives in Indigenous Lands are: (a) initiatives must be preceded by a broad participation and information process, including information about the risks and opportunities, in order to properly inform the interested and affected indigenous peoples and local communities; (b) they must ensure the right to free, prior and informed consent for indigenous peoples; (c) they must guarantee to the communities autonomy of decision with regard to their land and resources management, always respecting their traditional way of life and the communal decision-making mechanisms of the indigenous peoples, in line with current legislation; and, (d) they must be considered to be collective property and to generate resources which can be applied in activities of collective interest such as education, health, sustainable economic alternatives, for security, cultural valorization, territorial protection, transport infrastructure, communications, energy efficiency and cultural/institutional strengthening, without substituting the functions inherent in the Brazilian State related to such issues. These guidelines should also stand for REDD+ initiatives directed to traditional communities, providing support for developing necessary skills for undertaking measures and planning processes for REDD+.⁹

22. Brazil FIP and DGM have the potential to contribute directly and indirectly to the achievement of these goals by contributing to:

- Strengthen alternatives for family and community livelihoods in sustainable landscapes by (i) supporting traditional livelihoods such as the wild collection of extractive products that continues to be highly sustainable in terms of maintaining ecosystem functions and/or (ii) supporting alternative livelihoods through the promotion of conservation *in situ* and *on-farm* of agrobiodiverse species and/or the building of sociobiodiverse product chains with a view to generating sustainable markets;
- Implement ethno-management and development plans of Indigenous Lands and other traditional territories, without undermining the legal obligations of the Brazilian State;
- Develop the capacity of IPTCs to participate in policy decision-making processes related with REDD+ and sustainable management of forest and natural resources; and,
- Improve IPTCs access to other sources for financing forest conservation and environmental and territorial management.

23. The full scope of actions the Brazil DGM and its potential beneficial impacts for IPTCs will also be defined throughout the preparation process.

Proposed Plan for Consultation with Indigenous Peoples and Traditional Communities

24. The preparation of the Brazil DGM will be based on the engagement, consultation and participation by its primary stakeholders: Indigenous Peoples and Traditional Communities and their representative organizations. Arrangements for involvement and consultation process are being coordinated by the MMA and FUNAI with the support of the MDBs.

25. A first information workshop on the DGM – mostly focused on the overarching principles of the mechanism – was held on November 2011, as a side event of the Workshop on safeguards for REDD+. Given recent developments on the Brazil Investment Plan and on the DGM implementation arrangements for the global component, a plan for consultations on the Brazil DGM with IPTCs will follow shortly. It will rely mostly in direct¹⁰ consultations with authorized

⁹Additionally, FUNAI has proposed that REDD+ initiatives must be considered as basic tools for implementing PNGATI.

¹⁰ Insofar as representatives of indigenous peoples attending the information session on the Brazil

and self-selected representatives from Indigenous Peoples and Traditional Communities. The process of dialogue and consultation with primary stakeholders will continue during the preparation of Brazil DGM.

Investment Plan during the Joint Mission have voiced some reservation with regards to the cultural adequacy of online (via the web) consultations.

ANNEX 4 – BRAZIL READINESS PROPOSAL AND THE NATIONAL REDD + EQUIVALENT STRATEGY

1. Brazil has the largest area of tropical forest in the world and a diverse mosaic of biomes. Given the complexity of the socio-economic situation of the peoples who depend on the forest ecosystem, national actions aimed at reducing greenhouse gas emissions from deforestation and forest degradation, conservation, sustainable forest management and increasing forest carbon stocks (REDD+) are anchored in the promotion of sustainable development and efforts to reduce poverty throughout the country.

2. The United Nations Framework Convention on Climate Change Decision 1/CP.16 decided that REDD+ activities should be implemented in three phases. Considering this approach, Brazil is well advanced. There are measures and initiatives in place and formally established, such as:

- a. Nationally Appropriate Mitigation Actions – NAMAs presented to the UNFCCC;
- b. National Policy on Climate Change, defined by law, including national voluntary commitments;
- c. Plans to reduce deforestation and forest degradation for biomes and states;
- d. Transparent and technically consistent deforestation monitoring systems for the Amazon;
- e. Reference levels of deforestation and emissions, including historical baselines;
- f. Systems of forest certification;
- g. Proposals for social and environmental principles and criteria for REDD+;
- h. Regional mechanisms for funding and channeling international resources, such as the Amazon Fund;
- i. Strong forest legislation, which promotes sustainable forest management;
- j. Arrangements for collective tenure of land by indigenous peoples and traditional communities, with widespread recognition of territories;
- k. Strong scientific capacity, and
- l. A participatory process of discussion of the National Strategy for REDD+.

3. The country is in the process of structuring and assembling the existing initiatives around a National Strategy for REDD +. The Strategy aims to connect actions with funding related to payments based on the country's performance, in the various biomes, in terms of reduction of emissions, conservation and enhancement of forest carbon stocks.

4. In June 2010, the MMA launched a participatory process for formulating proposals for a national strategy for REDD+. About 150 actors participated with recommendations, summarized in the "Document summarizing recommendations of multiple actors to prepare for the National Strategy on REDD +" available on the Portal of REDD+.

5. Before that, in 2009, the Brazilian Forest Service (SFB) had launched the first survey of REDD initiatives being implemented in Brazil. This survey was expanded through an electronic portal focused on the registration of actions, launched in 2010, that serves as a vehicle for communicating the progress of designing the National Strategy.

6. In 2011, the Executive Group of the Interministerial Committee on Climate Change (CIM) indicated that the technical elements of the National Strategy for REDD+ in Brazil should be detailed, through discussions between the Presidency, MF, MAPA, MCTI, MDA, MPOG, MMA and MRE. Six interministerial meetings were held, in which SFB and FUNAI also participated actively.

7. Below there are the main initiatives of GoB advancing the implementation of a national strategy for REDD+.

National plans, programs and policies related to REDD+

8. This section is a brief summary of the challenges, trends, financing and objectives of the national plans, programs and policies which contribute to reducing GHG emissions by reducing deforestation and forest degradation.

National Policy on Climate Change (PNMC)

9. The National Policy on Climate Change, defined by a specific law, is a key framework for integrating and harmonizing public policies. The policy was elaborated by the Interministerial Committee on Climate Change (CIM) and its Executive Group, with the collaboration of other collegiate organs such as the Brazilian Climate Change Forum, the Interministerial Commission on Global Climate Change, the III National Environment Conference, together with State Climate Change Forums and civil society organizations. The National Policy on Climate Change was approved by the Congress in December 2009.

10. The PNMC sets out the goals and guidelines for the domestic approach to tackling climate change. This effectively enshrined in law the national voluntary commitment to reduce emissions by 36.1% to 38.9% compared with the normal growth curve of Brazilian emissions by 2020. The set of Brazilian initiatives involves mitigation in a number of areas: deforestation, agriculture, energy and steel manufacturing, etc.

11. With regard to combating deforestation, Brazil's goal is to achieve a reduction of 80% of deforestation in the Amazon by 2020 compared with the average for 1996-2005, and a 40% reduction in deforestation in the Cerrado compared with the average for 1999-2008 (15,700 km²)¹. The National Policy also seeks to promote adaptation measures to reduce the adverse effects of climate change and counteract the vulnerability of environmental, social and economic systems.

12. A descriptive summary of the plans relevant to prevention and control of deforestation and land use change is presented below.

PPCDAm

13. The Action Plan for the Prevention and Control of Deforestation in the Legal Amazon is the longest surviving public policy for controlling deforestation in Brazil. It has achieved significant results for the government. The plan is updated periodically in order to reflect changes in the dynamics of deforestation in the Amazon and the maturing of the actions undertaken, as well as to ensure that the achievements are consolidated and continued.

14. Initially, deforestation rates fell significantly, but their continuation cannot be fully assured. This obliged the PPCDAm to focus on a smaller area from 2008 onwards and to strengthen measures such as restricting credit and responsibility for productive chains and reinforcing (via the *Operação Arco Verde*²) land and environmental compliance regulations, while seeking at the same time to maintain progress in reducing deforestation rates.

15. The effectiveness of this program can be demonstrated by the fall in deforestation, even when the positive economic growth figures of Brazil and the increase in agricultural exports are taken into account.

¹ Decree n° 7,390, 12/09/2010.

² The Arco Verde operation aims to develop in local population groups new models of economic exploitation by inverting the logic of deforestation. The operation involves a number of different government entities coordinated by the Civil Household of the Presidency of the Republic, together with a number of municipal authorities and NGOs. The Arco de Fogo operation aims to combat deforestation in the Amazon by implementing public safety actions promoted by the Federal, Civil and Military Police.

PPCerrado

16. The Action Plan for the Prevention and Control of Deforestation and Fires in the Cerrado was created on the basis of the highly successful PPCDAm model. It was also coordinated by an Interministerial Commission (the same as the PPCDAm). This plan, introduced by decree on 15th September 2010, plans investments of around BRL 340 million over the period 2010-2011, based upon the following thematic pillars: a) monitoring and control; b) protected areas and territorial ordering; and c) promotion of sustainable activities. In addition, environmental education is also regarded as an important cross-cutting element. The main actions planned for the PPCerrado, and the expected outcomes by 2020, are presented below:

Monitoring and Control

- Creation and implementation of a biome monitoring system (producing annual rates);
- Development and implementation of a deforestation detection system in almost real-time;
- Up scaling enforcement operations at highway junctions;
- Training of 4,500 firefighters;
- Promoting payment for environmental services in the Cerrado biome following approval of the corresponding draft law.

Protected areas and territorial ordering

- Elaboration of major economic and ecological zoning of the biome and support to be supplied to the states to enable them to undertake zoning (ZEEs);
- Legal ratification of 300,000 ha of Indigenous Lands;
- Demarcation of 5.5 million ha of Indigenous Lands;
- Expansion of Protected Areas by 2.5 million ha; and
- Consolidation of federal Protected Areas existing in the biome.

Boosting Sustainable Productive Activities

- Rural credit lines made available for recovering 8 million ha of degraded pasture land, RLs and APPs;
- Increasing the area of forest planted for use by the steel industry (charcoal) by 3.2 million ha;
- Increasing the Constitutional Funds (FCO, FNE and FNO) for financing reforestation projects for steelmaking purposes and for improving forest management and agro forestry systems in the Cerrado;
- The PRONAF *Sustentável* program³ to be given priority in the municipalities of the Cerrado;
- Public and private banks to improve the effectiveness of the Green Protocol (*Protocolo Verde*).⁴

³ PRONAF *Sustentável* (Program for the Sustainable Development of the Family Production Unit) aims to promote sustainable development of family-based agriculture, and participatory management of the use of natural resources for the gradual adoption of technically and economically viable production systems which will foster the transition to agroecological models.

⁴ The protocol of intentions before socio-environmental responsibility signed by the Ministry of the environment and the main government official banks (Brazilian Development Bank – BNDES, *Caixa Econômica Federal*, *Banco do Brasil S.A.*, *Banco da Amazônia S.A.* and *Banco do Nordeste do Brasil – BNB*]). The signatories undertake to make efforts to implement the following principles: 1- to finance sustainability development by offering credit lines and programs to Foster the quality of life of the population, sustainable use of natural resources and to protect the environment; 2- to consider the socio-environmental costs and impacts on asset management (own and third parties) and in the risk analysis of clients and investment projects on the basis of the national environment policy; 3- to promote the

- Implementation of the *Programa Mais Ambiente* in the priority municipalities;
- Technical assistance and rural extension to be made available for forest management in the INCRA settlements (90,000 families benefited);
- Inclusion of 7 new sociobiodiverse products in the Minimum Price Guarantee Policy (PGPM);
- Inclusion of agro extractive and sociodiverse products in the Food Procurement Program.

Crosscutting Theme: Environmental Education

- To strengthen environmental education and valorization of the Cerrado biome

ABC Plan (Plano ABC)

17. In accordance with the National Policy on Climate Change, the government shall establish sectoral climate change mitigation and adaptation plans with a view to consolidating a low carbon economy and contributing to achieving the voluntary national commitments announced by the policy.

18. The Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture (the ABC Plan) is one of the sectoral plans prepared in accordance with Article 3 of Decree 7,390/2010 with the aim of organizing actions to be undertaken to encourage the adoption of sustainable production techniques.

19. The ABC Plan embraces 7 programs, 6 of which refer to mitigation techniques and a seventh program containing initiatives for adaptation to climate change. This is a country-wide plan due to be put into effect between 2010 and 2020. Revisions and updates will be made as appropriate.

20. The technologies recommended in the ABC Plan are intended to intensify the efficient use of land on a sustainable and low GHG basis, with the aim of easing pressure on deforestation in new areas of native forest for converting forest land to agricultural purposes.

21. The ABC Plan aims to provide incentives for technological processes which neutralize or minimize the effects of greenhouse gases in rural areas and their adoption by farmers over the next few years.

22. The ABC Plan sets out to encourage a new and more sustainable approach to agriculture by reducing global warming and carbon emissions in the atmosphere. The program seeks to achieve its goals and results by 2020 through six basic initiatives focused on the following:

- a. The no-tillage technique (direct planting): this technique dispenses with ploughing and avoids soil erosion by sowing directly onto the stubble left by the previous crop. The technique protects the soil, reduces water use, increases crop productivity and lowers expenditure on machinery and fuel. The basic objective of the ABC Plan is to increase the current 25 million ha under no-tillage to 33 million ha by 2020.
- b. Recovery of degraded pasture land: the aim is to increase sustainable management and, therefore, productivity of pasture lands in order to change the carbon balance of the areas under management from source of carbon to sink of carbon, increasing the carbon stocks on the soil. Recovery of 15 million ha is planned by 2020.
- c. Crop-livestock-forest integration and agro forestry: this system seeks to alternate pasture with crop growing and forest development on the same area, as well as agroforestry systems. The goal is to recover the fertility of the soil and part of the forest cover, increase incomes and generate employment. The current objective is to increase use of the system over 4 million ha by 2020.

sustainable consumption of natural resources and the materials derived from them in internal processes; 4- to inform, educate and engage interested parties in the sustainability policies and practices of the institution; and 5- to promote harmonization of procedures, cooperation and integration of effort between the signatory organizations for progressing implementation of these principles.

- d. Commercial planted forests: planted forest areas can generate future income for rural producers, reduces carbon in the atmosphere by capturing them into the new formations and alleviate the pressure for resources under native forest, therefore reducing the pressure for deforestation. The aim is to increase the area of forest plantations from 6 million to 9 million by 2020.
- e. Biological nitrogen uptake: this technique aims to develop microorganisms/bacteria to capture the nitrogen existing in the atmosphere and transform it into an organic material for crop-growing, thereby reducing production costs and improving soil fertility. The ABC Plan intends to increase the use of this method on 5.5 million ha by 2020.
- f. Treatment of animal wastes: this initiative seeks to treat waste from pigs and other animals in order to prevent emissions of methane, using the biogas to generate energy and solid as organic compost. The goal is to treat 4.4 million cubic meters of residues from the pig rearing and other activities at national level by 2020.

Brazilian Forest Code and the *Mais Ambiente* Program

23. The main forest law in Brazil, known as the Forest Code, first appeared in 1934. The 1965 version also determined the minimum size of forests on rural landholdings and Areas of Permanent Preservation. These were updated for the Amazon in 1996 by a provisional measure with the force of law.

24. In 2009 the Government of Brazil created by decree the Federal Program to Support the Environmental Regularization of Rural Landholdings (*Programa Mais Ambiente*⁵) to provide support for enabling farmers and occupiers of rural settlements to comply with the environmental regulations under the Forest Code. This program offers the opportunity to landowners and squatters to regularize their situation regarding maintenance of the Legal Reserves (RL) or Areas of Permanent Preservation (APP) located on their lands. Smallholders, land reform settlers, family rural producers and traditional peoples/communities are the targeted beneficiaries of the program, and will receive government support to restore the degraded APPs and RLs on their lands. Special beneficiaries will also receive technical assistance, environmental education, seeds/seedlings and appropriate training intended to help especially these small-scale family rural producers generate employment and income and keep local economies running.

25. In order to join the program and guarantee benefits, landholders must complete the Rural Environmental Cadastre (CAR) related to his/her property or settlement. A description must be made of the landholdings, the location of the RL and APP and the remaining forested areas. The benefits of adhering to the *Mais Ambiente* program include simplification of the environmental compliance process, exemption from and suspension of fines levied on environmental liabilities, support by the public authorities to help farmers recover degraded areas, APPs and RLs on their lands. Other advantages are:

- a. Simplification of the environmental compliance process regarding rural land, thus facilitating rural producers' access to rural credit;
- b. Suspension of fines levied by IBAMA converted into good quality environmental recovery services in return;
- c. Exemption from fines for violations committed before 10th December 2009;
- d. Official support through technical assistance and rural extension subprograms, production and distribution of seeds and seedlings, training and environmental education.

⁵ Source: adapted from <http://www.maisambiente.gov.br/> accessed on 01/15/2012.

Table A4.1 – Main current legal frameworks for the prevention and control of deforestation in the Cerrado

Law/Policy	Objective	Target public	Outcomes	Link with REDD (transversal)
Climate change				
Law No. 12,187 of 29th of December 2009; PNMC	Mitigation of and adapting to climate change	Brazil	Emissions reductions of 36.1-38.9% in comparison to the projected growth of emissions in 2020	Includes, among its other instruments, deforestation control plans.
General norms for the protection and sustainable use of forests				
Forest Code	To regulate the use of the forests and their conversion	Brazil; forestry and agricultural sector	Existence of a legal framework	Planning of forest conversion
National System of Protected Areas – SNUC	To establish the SNUC	Brazil	Large-scale creation of Protected Areas	Conservation of the forests
National Policy for the Environmental Management of Indigenous Lands (PNGATI)	To guarantee and promote the protection, recovery, conservation and sustainable use of Indigenous Lands, thereby assuring the integrity of the heritage, improving quality of life and providing good conditions for the physical and cultural reproduction of the current and future generations of indigenous peoples, respecting their autonomy and own ways of managing their land and the environment	Brazil, Indigenous Lands and surrounding areas		Federal Government
Sustainable use of public forests				
Public Forests Management Law (11,284/2005).	To deal with the management of public forest for sustainable production To establish the Brazilian Forestry Service within the structure of the MMA. To create the National Forest Development Fund	Brazil: forests sector	A national forest inventory, a register/database of public forests, public forest concessions for the private sector, sharing forest management with the States.	Devolution of forest management to the states.

Source: Adapted from BRASIL/MMA. 2011, op. cit.

Financing

26. Brazil has 4 federal funds coordinated by the MMA (items a-d below) for use in environmental and biodiversity conservation projects in the Cerrado. Other government funds also exist for this purpose.

- a. The **National Environment Fund** (FNMA) was created in 1989 by Law No. 7.797 in order to develop projects aimed at the rational and sustainable use of Brazil's natural resources, including the maintenance, improvement or recovery of environmental quality to improve the Brazilian population's quality of life. The FNMA secures financial resources from the federal budget, grants, interest on capital investment and from fines levied under the Environmental Crimes Law, as well as from other sources regulated by specific legislation. The funds are invested in the conservation and sustainable use of water resources, forests and biodiversity, land planning and management, environmental quality, sustainable societies and the shared management of fishing resources. The Fund is administered by a Management Council with power of decision within the Ministry of the Environment. To date, it has invested over BRL 170 million (about USD 100 million) in over 1,300 small socio-environmental projects.
- b. The **National Forest Development Fund** was created in 2006 to promote the development of sustainable forest activities in Brazil and to provide incentives for technological innovation in the sector. The Fund (currently in the process of implementation) will receive a percentage of a minimum of 20% of the income obtained from forest concessions to be invested in projects undertaken by government agencies or by private non-profit organizations. Administration of the Fund is shared between three agencies: IBAMA, which is charged with environmental monitoring of the forest management plans; the Brazilian Forestry Service, which enforces compliance with the obligations contained in the concession contracts; and independent auditing firms which are responsible for auditing the forest-related activities carried out.
- c. The **National Climate Change Fund** (*Fundo Clima*) is one of the main instruments for promoting and financing activities which form an intrinsic part of the National Climate Change Policy established by law. The Fund aims to ensure the provision of resources for supporting projects, studies and the financing of developments aimed at mitigating and adapting to climate change and its effects. The Climate Fund major income source is from up to 60% of the share destined to the Ministry of Environment from the oil production tax. There are two categories of financing: loans and grants. A management board, composed by representative from different Ministries, states, private sector, unions, scientists and nongovernmental organizations defines the financial lines yearly. The loans (around 85 to 90% of the Fund) are managed by the National Economic and Social Development Bank (BNDES), the grants are managed by the Ministry of Environment directly. On its second year of implementation, the Climate Fund has BRL 590 million (around USD 330 million) in its portfolio for investments. Several areas of mitigation and adaptation are in the strategy of investment, among them are sustainable forest management in the Caatinga, monitoring system for the ABC Plan emissions reductions, plans of environmental and territorial management in indigenous land in Cerrado and Caatinga and innovation on adaptation and mitigation targeting vulnerable communities.
- d. The **Amazon Fund** was created in 2008 by law to ensure the continuity of Brazil's efforts to voluntarily reduce greenhouse gases arising from deforestation and forest degradation. The resources of the fund currently arise from three grants⁶ from the

⁶ The Amazon Fund has three sources of funding: the Government of Norway with an initial donation of approximately USD 107 million (with a promise of further donations of around USD 134 million in 2010

governments of Norway and Germany and from Brazil's oil company, Petrobras. Resources are also raised from net returns on its deposits. At least 80% of the investments of the Fund are reserved for the Amazon region and up to 20% can be invested in monitoring deforestation, as well as in control systems in other Brazilian biomes and other tropical countries. The Amazon Fund is managed by the BNDES, which also deals with capturing resources, contracting and monitoring projects and a variety of other actions. In 2009 the first tranche of projects to benefit from resources of this Fund was approved in the following areas:

- i. Management of public forests and protected areas;
 - ii. Environmental control, monitoring and enforcement;
 - iii. Sustainable forest management;
 - iv. Economic activities developed on the basis of the sustainable use of the forest;
 - v. Economic and ecological zoning, territorial ordering and tenure regularization;
 - vi. Conservation and sustainable use of biodiversity; and
 - vii. Recovery of deforested areas.
- e. The **National Fund for Scientific and Technological Development (FNDCT)** is coordinated by the **Ministry of Science, Technology and Innovation (MCTI)**. This was created under Decree Law No. 719/1969 as a financial instrument to link science and technology with the National Development Policy. Among the priority actions of the MCTI Science, Technology and Innovation Action Plan, at least five are related directly or indirectly to the policies and activities associated with the recovery of degraded areas, deforestation and forest conservation and the reduction of greenhouse gases in the forest sector: Biofuels, Renewable Energies, Biodiversity and Natural Resources, the Amazon and the Semi-Arid Region, Meteorology and Climate Change. The three latter actions together absorbed around BRL 260 million between 2007 and 2009. The MCTI created from 1999 onwards within the FNDCT a number of Sectoral Funds fed by fees levied on industrial turnover and industrial use of natural resources and aimed at strengthening and streamlining the national science and technology system. Some of the funds are targeted at activities related to the five above-mentioned actions: the Water Resources Sectoral Fund, the Biotechnology Sectoral Fund, the Agribusiness Sectoral Fund, the Amazon Fund and the Energy, Oil and Natural Gas Fund. The Studies and Projects Financing Public Company (FINEP), under the aegis of the FNDCT Executive Secretariat, has contracted from 2002 to the present day, using different sources of finance including the sectoral funds (in its non-reimbursable portfolio), around BRL 960 million worth of 'green' projects, mainly focused on low carbon projects including land use change, renewable energies, biofuels, green technologies and biodiversity. During this period a total of BRL 248.2 million was allocated to land use change projects.

and up to NKR 750 in 2011); the German Government through the Kreditanstalt für Wiederaufbau (KfW) – a donation of up to EUR 21 million; and the company Petrobras – three donations of USD 2.37 million, USD 1.02 million and USD 826 thousand (BRL 1.44 million).

ANNEX 5 – TECHNICAL QUALITY REVIEW

Evaluation of the Brazil Investment Plan for the Forest Investment Program

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Introduction

The Brazil Investment Plan (BIP) is aimed at sustainably improving land use and forest management in the Cerrado. The Cerrado is the second largest biome in both Brazil and South America. It is also where three major river systems in South America are born; i.e. Tocantins-Araguaia, Paraná-Plata and São Francisco (§30, BIP).

The Cerrado Biome has been and still is home to a substantial fraction of Brazilian agricultural production, particularly soybean and its derivatives (BIP, 2012). Brazil is among the top exporters of agricultural goods. Therefore, agricultural production has been increasing in the Cerrado, most likely because of the conversion of native forest land to agriculture (i.e. cropland and cattle raising, particularly beef cattle). During the period 2002-2008 the Cerrado Biome lost 4.1% of its forest cover, so that only 52% of the area covered by native vegetation remains (§46, BIP).

Although data on the areas involved in that particular land-use conversion are not provided in the presentation, its magnitude can be assessed by the fact that anthropogenic emissions of CO₂ from LULUCF accounted for 77% of the country's emissions of that gas in 2005. Emissions from the Cerrado accounted for about 17% of the country's CO₂ emissions in that year. However, the relative contribution of the Cerrado to the country's net anthropic CO₂ emissions is likely to have increased since then because those emissions from Amazonia decreased more steeply than in the Cerrado.

About 60 per cent of the total Brazilian methane (CH₄) emissions were produced by beef cattle in 2005. This herd was the second largest in the world; its size made it account for 90 per cent of CH₄ emissions from the agriculture sector. Increases in the emissions of CH₄ with time have been mostly driven by the increase of the cattle population over recent years. CH₄ emissions from burning biomass amounted to 17 per cent of the national emissions. How many of these emissions came from the Cerrado is not indicated.

About 68 per cent of the national nitrous oxide emissions (N₂O) were derived from grazing livestock excrements and the use of chemical fertilizers (figure 4, BIP). Just 4 per cent of those emissions were derived from biomass burning in LULUCF activities. There is experimental evidence that emissions of N₂O are very low under natural conditions, but clearing of natural vegetation, its burning, and fertilization of agricultural lands has been found to increase N₂O emissions (§36, BIP).

Greenhouse gas emissions from both land-use change activities and agriculture are large in Brazil. How many of these has been produced in the Cerrado cannot be determined from the data

presented in the BIP. However it is clear that they are large enough to look for opportunities to mitigate those emissions (section 2, BIP).

The Federal Government of Brazil has lately made substantial and unyielding efforts to reduce deforestation levels in Amazonia; in fact, those endeavors has resulted in 345 per cent less deforestation in 2011 compared to 2004 (§29, BIP). The Federal Government is well aware of the ongoing conversion of forest lands in the Cerrado Biome (§29, BIP), so much so that it has devised the current IP to fund together with MDBs policies and actions aimed at stopping deforestation and land degradation. To effectively and efficiently do this, estimates of greenhouse gas (GHG) emissions from deforestation should be based on a clear understanding of changes in the stocks of major carbon compartments, like above and belowground biomass, and soil organic matter (§33, BIP). A well-defined and periodic dry season in winter favours the outbreak and propagation of wildfires. Also forest land and savanna vegetation are burned to sow pastureland for raising beef-cattle (§36, BIP).

The BIP is cleverly conceived as a two-pronged strategy to reduce deforestation and forest degradation through (a) the implementation of diverse conservation actions on existing native forests, and (b) increasing the productivity of non-forest lands in order to decrease social and economic pressures on forestland in order to advance the agricultural frontier. To these ends the four projects in the IP would receive USD 70M in grants and loans from FIP funds, and USD 57 M would be needed from other sources. The Federal Government of Brazil is expected to support the IP through annual budget allocations, as it has already done by allocating more than USD 110 to the design of methodologies, surveys and other preparation work needed to deploy actions associated to the FIP projects, as well as to support their implementation (§147 and §148, BIP). The IBRD and the IDB will be the main MDBs involved in the administration of funds for the BIP.

Many governmental organisms will carry out programs and actions relevant to the BIP, but these will be coordinated by the ministries of the Environment (MAA); of Science, Technology and Innovation (MCTI); and Agriculture, Livestock and Food Supply (MAPA).

The proposed BIP has been widely and publicly submitted to the consideration of diverse stakeholders through informational and consultation sessions. The plan contains information of recent and current direct and indirect (Internet) consultations. Up to now representatives of the private sector, academia, NGOs, social movements and State environmental agencies, as well as indigenous peoples and traditional communities have been consulted.

The intervention strategy of the BIP consists of two main themes and two projects for developing each of them. One of the themes deals with the management and use of anthropised areas; it will be materialised by two projects: one (project 1.1) aims at the environmental regularization of rural lands, and the other (project 1.2) is based on the Low-carbon agriculture plan (ABC), to be carried out in agricultural areas which formerly were forestlands. The other theme refers to the generation and management of forest information. These actions will be achieved by projects 2.1 and 2.2. Project 2.1 essentially is aimed at making a forest inventory of the Cerrado with a view of giving public and private sector a tool needed for the conservation and valorization of forest resources. Project 2.2 describes the implementation of an early-warning system of forest fires, for preventing them by means of a system designed for monitoring changes in vegetation cover.

General comments

The BIP clearly complies with the four specific objectives of the FIP. It will initiate and build on steps towards a transformational change in forest related policies and practices by promoting inter-institutional collaboration related to land use and by generating the instruments to guide federal and state financing policies in the land use sector, particularly CAR, ABC Plan and *Mais Ambiente* Program. It will also develop a monitoring system that improves the estimation of LU-related GHG emissions in the Cerrado Biome and to establish an early warning system for forest

fires. The BIP is directed towards promoting sustainable land use of the private small-scale landowners, targeted through a well-designed plan ABC.

The Government of Brazil will not set a target for the reduction in emissions of tCO₂ equivalent in the Investment Plan. It will, however, estimate the potential reduction of emissions in tCO₂ equivalent related to the indicators presented in this IP, by using the methodology employed by Brazil in its periodic National Communication to the UN Framework Convention on Climate Change. The consultants consider that the BIP should pay more attention to the methodology to calculate the mitigation potential of the project as this will be quite different from calculating national or biome-wide GHG emissions per se, as it has to compare a plausible outcome of a well-defined reference scenario with the outcome of the investment plan.

The Brazil Investment Plan strategy mainly targets investments outside the forest sector necessary to reduce the pressure on forests; and institutional capacity, forest management and information. As a complementary measure, the Plan also focuses on the third FIP investment area by supporting mitigation actions related to forests, such as promotion of training initiatives for the adoption of sustainable and innovative technologies, both in the forestry and agricultural sectors, the integration of forest and agricultural systems, the reforestation and restoration of RLs and APPs in landholdings. Each of the projects in the Brazil Investment Plan will contribute to this coordinating effort by funding investments and activities designed to support actions of the various executors and their working relationships with other government entities involved. In addition to addressing the different aspects of interagency coordination, the Plan will also contribute to resolving operational, regulatory and management challenges. The FIP preparation process in Brazil is led by a technical committee with representatives of the Ministry of Finance (MF), Ministry of Environment (MMA), Ministry of Science, Technology and Innovation (MCTI), Ministry of Agriculture and Livestock (MAPA), Brazilian Forest Service (SFB) and the Brazilian Agricultural Research Corporation (Embrapa), including a scoping mission, and informational sessions. However, it is not clear from the document how all the efforts of the different projects will be coordinated.

Brasil has demonstrated with examples in other regions to have the capacity and political will to implement the BIP in the Cerrado Biome. Various federal and research institutes have developed experiences that are examples globally of how deforestation and forest degradation can be successfully attended.

The proposal in general is based on sound technical assessments. However, the current consultants particularly consider that the assessment of the GHG implications of the project could be improved.

The BIP objectives and expected outcome clearly identifies how the projects could trigger replicable programs for the other biomes of the country to eventually achieve transformational change at the national level.

The project will pilot the implementation of a far-reaching CAR program that is directed towards establishing a rural environmental cadaster that pretends to ensure compliance by landowners of LU-related laws, but that at the same time is the basis for farmers to enter the plan ABC, which provides special credit lines to those who adopt good agronomic practices. At the same time, the project will set up a NFIS at the level of biome that will be the basis for defining forest-related policies, monitoring the impact of LU-related projects, and detecting and preventing forest fires.

In the following section the current consultants will briefly comment on how the specific criteria for a FIP are taking into consideration by the BIP.

Specific criteria to be fulfilled for a FIP:

- Climate change mitigation potential: The proposal does not give an outline on how the GHG mitigation potential of the BIP will be calculated, which is considered particularly important for project 1.2.

- Demonstration potential at scale: Brazil does not participate in the FCPF and is not a member of the UN-REDD program. Nonetheless the actions proposed under the Investment Plan are a sub-set of the Brazil's National Climate Change Plan and are consistent with activities being considered under those two international initiatives. The National Climate Change Plan has strong GHG reduction targets for 2020 and onward, particularly in the LULUCF sector that will be a basis for REDD+ based mitigation targets.
- Cost-effectiveness: The BIP does not present a cost-effectiveness analysis, possibly due to the fact that the BIP does not define any GHG-reduction targets.
- Co-benefits: The investment plan identifies well-defined environmental, socio-economic and institutional co-benefits to be generated from the implementation of the BIP
- Implementation potential: In general the implementation potential of the BIP is very high. The only concern of the current consultants is that although the BIP recognizes that the success of project 1.1 and 1.2 depends strongly on the active participation of the private landowners in the CAR and ABC programs, no specific actions are identified on how to stimulate active participation of the private landowners, in order to guarantee a successful outcome of the project.
- Natural forests: The investment plan is focused on sustainable use of non-forest and restoring or protecting private protected land (both categories), thus reducing pressure on remaining natural forests.

In the following sections the consultations present brief comments on each of the four proposed projects.

PROJECT 1.1

Addresses deforestation in the Cerrado brought about by the expansion of agriculture and cattle-ranching. The aim of the project is to implement the CAR (Rural Environmental Cadastre) in selected states and municipalities to ensure compliance by owners or occupiers of rural properties. In this way it is expected that deforestation and forest degradation will decrease, thus reducing emissions of CO₂ and increasing carbon sequestration in the properties comprised in the project.

A – Compliance with the objectives, principles and criteria of a FIP

The aim of the project is to be realized through the development of four components (a – c), which together meet some of the objectives¹, principles², and criteria³ of a FIP. It is commendable the appointment of a Director for overseeing the overall implementation of the project (component c.).

B – Co-benefits

The project will have environmental, socio-economic and institutional co-benefits derived from the achievement of the objectives of the proposed FIP. The most relevant-co-benefit will be making the CAR suited to be used at many administrative levels, ranging from the national to the municipal; enabling landholders to access the Plan ABC, increasing the accessibility of many kinds of farmers and indigenous communities to rural credit, increasing income from agricultural activities, and conserving protected areas and remaining forests, soils and headwaters of major river systems.

¹ Paragraph 11 a).i, a).iii, a).vi, a).vii and d) (FIP, 2009)

² Paragraph 13 a) and f) (FIP, 2009)

³ Paragraph 16 a) and c) (FIP, 2009)

C – Conclusion and recommendation

The project is clearly written and presented; it satisfies relevant objectives, principles and criteria for the proposed investment plan it belongs to. The many and diverse co-benefits the implementation of the project would produce would disseminate beyond the Cerrado Biome. Farmers outside it would have the opportunity to practice an environmental friendly agriculture for both their own benefit and the country's at large.

The *Mais Ambiente* Program, which the CAR is part of, certainly has a complex organizational structure. It seems that many planned activities under the present Investment Plan are currently undertaken (or have been so) in other regions and circumstances. Showing the results of those past and present experiences, and clearly stating their differences and similarities with the current project would much help envisaging the likely performance of the *Mais Ambiente* program in the Cerrado, no matter how much those experiences were in the end incorporated to the final design of the current project.

PROJECT 1.2

This project addresses sustainable production in areas previously converted to agricultural use; the project is based on the ABC Plan. The objective of the project is to improve the management of land and natural resources in private landholdings as a strategy to reduce GHG emissions from land-use change, particularly deforestation of native forestlands in the Cerrado. The project would contribute to the government of Brazil's efforts to diminishing the national deforestation rate.

The main tool of the ABC is special credit lines that can be accessed by rural producers who adopt good agronomic practices that reduce the impact of GHG emissions. Smallholders, land reform settlers, family farmers and traditional peoples/communities are special beneficiaries of the Program, and receive, free of charge, government support to restore the degraded APPs (areas of permanent preservation of) and RLs (legal reserves) on their lands, through technical assistance, environmental education, provision of seeds/seedlings and appropriate training.

A – Compliance with the objectives, principles and criteria of a FIP

The project is in compliance with objectives⁴, principles⁵ and criteria⁶ to be fulfilled by the FIP contained in the BIP

B – Co-benefits

The environmental co-benefits of the project are prima-facie evident since they stimulate the conservation of soil fertility, reduce soil erosion; stimulate the generation of biogas from animal waste, and stimulate farmers to enter the CAR.

The socio-economic co-benefits will be very important for the beneficiaries of the project because they will learn environmental-friendly production systems (e.g. crop-livestock-forest integration) and techniques (e.g. no-tillage)

The institutional co-benefits are not as clear and distinct as the other two, with due exception of the improvement of the overall efficiency of the implementation of ABC plan.

C – Conclusion and recommendation

The project objectives are clearly stated, and the development of those objectives together with the presentation of all relevant information needed to assess it is readily grasped by the reader. There are some issues of either editorial or informational nature that should be addressed to improve the transparency of the current IP.

⁴ Paragraph 11, ítems a).iii); a).iv); a).v); a).vi); a).vii); and a).viii) (FIP, 2009)

⁵ Paragraph 13, ítems a); e); and f) (FIP, 2009)

⁶ Paragraph 16, ítems a); b); c); d); e); g); h); and j) (FIP, 2009)

The editorial issue is that the source of the data displayed in the table A1.2 is not given. Informational issues refer to the agricultural practices recommended in the ABC Program. Some information on the experience gathered from and the results of the implementation of some or all of those practices in other biomes, or in the Cerrado but in farms larger than the ones focused by the ABC Plan should be provided and discussed (see Table 2). A useful piece of information for assessing the current project would be the average size of a smallholder's patch of land or farm.

In regard to the agricultural practices offered in the ABC Plan, most of them are known to increase carbon stock, or reduce emissions of CO₂ but under some provisos for some of those practices. For instance, it is well known that no-till increases the carbon stock in soils, but in some soil types or soil-moisture levels or depending on nitrogen-fertilization rate or the practice of monoculture emissions of N₂O, a greenhouse gas about 300 times more powerful than CO₂ as warming agent, may substantially increase thus reducing the climate mitigation power of the practice. Further, the ABC Plan favours the plantation of trees for industrial use and carbon sequestration. Depending on the species and the rotation regime chosen those plantations could negatively affect the availability of groundwater without much increasing the amount of carbon sequestered in the soil—the most likely situation in the case of not accounting for the carbon content in timber.

The experience gained with the implementation of the ABC Plan is particularly needed because the expected results from the implementation of the IP (table 7) are shown to be determined. Therefore, the current consultants think that the ABC Plan should be implemented as a pilot project in suitably chosen demonstration places in the Cerrado. Once the real environmental and economic impacts of menu of production and management proposal were assessed, the ABC Plan component of the present project could be extended to the whole Cerrado Biome.

PROJECT 2.1

The main objective of project 2.1 is to implement the NFI to the Cerrado Biome and to use the NFIS as the main information instrument that defines forest related policies. It will implement the NFI, establishing around 5000 sampling points in the Cerrado Biome, it will analyze landscape level phenomena, such as forest fragmentation and it will combine databases with vegetation maps. Its goal is to consolidate the NFIS as the main platform for analysis and knowledge management.

A – Compliance with the objectives, principles and criteria of a FIP

The aim of the project is to set up and manage a forest information system, which together with the information gathered through the NFI meet the FIP objectives⁷, principles⁸, and criteria⁹ of a FIP.

B – Co-benefits

The project will generate the information required to measure environmental, socio-economic and institutional co-benefits from projects implemented in the biome, among others for project 1.2.

C – Conclusion and recommendation

The project is clearly written and objectives and expected outcome well defined; it satisfies relevant objectives, principles and criteria for the proposed investment plan it belongs to.

Close coordination and collaboration with all other projects, in particular with project 1.1 and project 2.2. is considered critical for the successful implementation of project 2.1. It is also very important to seek additional co-financing of state and national funding sources, to guarantee the

⁷ Paragraph 11 **a).i, a).ii, a).iv, a).v, a).vi, a).vii, b) and d)** (FIP, 2009)

⁸ Paragraph 13 **a), c) and f)** (FIP, 2009)

⁹ Paragraph 16 **a)** (through a better understanding of GHG in the LULUCF sector), **b), e), f), g) and j)** (FIP, 2009)

implementation of the project beyond the FIP financing timeline, as this project will generate the basis for monitoring any LU related activity in the Cerrado Biome.

PROJECT 2.2

The main objective of project 2.2 is to establish an early warning system for preventing forest fires and a system to monitor vegetation change. The early warning system will be based on the success of such system developed for the Amazon Biome and extend this experience to the Cerrado Biome. As forest fires are an important component of LU-based GHG emissions, the successful implementation is an important component of the BIP.

A – Compliance with the objectives, principles and criteria of a FIP

The aim of the project is to set up and manage a forest information system, which together with the information gathered through the NFI meet the main FIP objectives¹⁰; principles¹¹ and criteria¹².

B – Co-benefits

If the early detection and prevention of forest fires is successfully implemented, the environmental, socio-economic and institutional benefits will be very important, not only for the Cerrado Biome, but also for the adjacent biomes and eventually at the national scale.

C – Conclusion and recommendation

The project is clearly written and objectives and expected outcome well defined; it satisfies relevant objectives, principles and criteria for the proposed investment plan it belongs to. The consultants would like the Brazilian government to take into consideration of a possible change of component b of project 2.2 (monitoring vegetation change) to component d) of project 2.1, (implementation of the National Forest Inventory), so that the vegetation mapping becomes an integral part of a well-designed forest inventory and the NFIS.

Final comments on the proposal

Strong points

1. The proposal is very much focused on tackling the main drivers of deforestation and forest degradation in the private sector, which are factors outside the forestry sector; and
2. The proposal is directed towards the generation of a solid system to monitor the forest resources, the incidence of forest fires, and land-use change, as a basis to report on environmental impacts of any rural development program in the region and to develop a system to control forest fires.

Weak points

1. The proposal lacks a clear vision of how to estimate the potential impact of the projects on GHG mitigation and its cost-effectiveness, and
2. Public consultation of the IP has taken place, both during direct contact with the stakeholders and via internet. Most of the events were dominated by representatives of governmental agencies with relatively little participation of other sectors. Particularly the little participation of the private sector (the main stakeholder of the proposal) has to be dealt with, in order to improve the likely success of the BIP.

¹⁰ Paragraph 11 **a).i, a).iii, a).v, a).vi, a).vii, a).viii** and **b)** (FIP, 2009)

¹¹ Paragraph 13 **a), b), c), d), e)** and **f)** (FIP, 2009)

¹² Paragraph 16 **a), b), c), d), e), g), h), i)** and **j)** (FIP, 2009)

Both consultants agree that the investment plan is viable, they only suggest that taking into account the observations on certain sections of the proposal would improve the projects and will put the plan completely in line with the objectives, principles and criteria of the FIP.

April 20, 2012

References

BIP, 2012. Brazil Investment Plan, version no. 2 – 27 March 2012. 104 pp
FIP 2009. Design document for the forest investment program, a targeted program under the SCF trust fund.

Government of Brazil’s response to comments from external reviewers regarding the Brazil Investment Plan for the FIP

General comments	Response to comments
<p>1- The consultants consider that the BIP should pay more attention to the methodology to calculate the mitigation potential of the project as this will be quite different from calculating national or biome-wide GHG emissions per se, as it has to compare a plausible outcome of a well-defined reference scenario with the outcome of the investment plan.</p> <p>2- The consultants particularly consider that the assessment of the GHG implications of the project could be improved.</p> <p>3- Climate change mitigation potential: The proposal does not give an outline on how the GHG mitigation potential of the BIP will be calculated, which is considered particularly important for project 1.2.</p>	<p><i>As these comments are related to different aspects of the quantification of GHG emissions, a common reply is presented here:</i></p> <p><i>The four proposed projects in the BIP draw upon ongoing Government policies and programs. FIP projects are important to help ensuring the synergies between these initiatives and building an appropriate framework for mitigation activities in accordance with the National Policy on Climate Change. This broader context demands a broader approach for addressing the mitigation potential of the BIP.</i></p> <p><i>As indicated in table 8 (“Expected results from implementation of the Investment Plan”) of the BIP, the Government of Brazil will estimate the potential reduction of emissions in tCO₂ equivalent related to the broad indicators, by using the methodology employed by Brazil in its periodic National Communication to the UN Framework Convention on Climate Change.</i></p> <p><i>The issue of direct attribution of reductions of GHG to FIP activities is a difficulty faced by all FIP pilot-countries. In the case of the Brazilian Investment Plan, although GHG emissions indicators are not used, sufficient information on carbon stocks and fluxes for Cerrado and on the mitigation potential of some alternative practices in agriculture is presented. It is important to highlight, however, that the contribution of the four proposed projects to the reduction of GHG emissions will be considered in the context of a wide array of initiatives that goes beyond the BIP. Some BIP projects (2.1 and 2.2) will also considerably improve the country capacity to produce estimates for GHG reductions.</i></p>
<p>4- It is not clear from the document how all the efforts of the different projects will be coordinated.</p>	<p><i>The section “Implementation arrangements” which describes how the different projects will be coordinated has been edited to make it clear that the IP Executive Committee (EC) and a Plan Management Unit will be created. The resources to support such coordination role have been identified under component d of project 1.1.</i></p> <p><i>Brazil IP Executive Committee (EC) will be responsible for the implementation of the</i></p>

	<p><i>Investment Plan through the coordination of the actions of the different ministries involved and the interaction of FIP activities with other governmental programs. The EC should stimulate synergies between FIP projects and the involvement of different stakeholders.</i></p> <p><i>The Plan Management Unit (PMU) will support the EC and will be formally established through an administrative ruling. PMU will be responsible for the overall implementation of the Brazil Investment plan and its projects, including operational planning, supervision, administrative and financial management and the adaptive management of the Plan based on inputs from the M&E plan (see next section). The dissemination of progress and results will follow a communication plan to be developed at the beginning of projects implementation. This plan should include a website, periodic reports and outreach activities.</i></p>
<p>5- Cost-effectiveness: The BIP does not present a cost-effectiveness analysis, possibly due to the fact that the BIP does not define any GHG-reduction targets.</p>	<p><i>Project-level targets and ensuing cost-effective analyses will be calculated as part of the preparation of each project. It is important to clarify, however, that as explained on answer 1 above, the targets won't necessarily be directly linked to GHG.</i></p>
<p>6- Implementation potential: The only concern of the current consultants is that although the BIP recognizes that the success of project 1.1 and 1. 2 depends strongly on the active participation of the private landowners in the CAR and ABC programs, no specific actions are identified on how to stimulate active participation of the private landowners, in order to guarantee a successful outcome of the project.</p>	<p><i>The team has edited the project 1.2 to better reflect the actions linked with the private sector. We recognize that the participation of landowners is crucial for the success of these two projects and the description of both components was improved to make this point clear. This can also be evaluated by the achievement of the co-benefits that have a strong focus on the interactions with landowners.</i></p> <p><i>The landowners are stimulated to adhere to CAR to have evidence of environmental compliance which is a requirement to access credit. The CAR also enables those landholders that adhere and who were in non-compliance to have their fines suspended as long as they restore and maintain the required RL and APP, fostering a win-win situation.</i></p> <p><i>The main tool of the ABC Plan is a special credit line that can be accessed by rural producers who adopt good agronomic practices that reduce the impact of greenhouse gas emissions. The terms offered by the ABC credit line are much more attractive than the regular rural credits, serving as incentive for farmers to convert their traditional agriculture practices to low carbon ones.</i></p>

Project 1.1- CAR	Response to comments
<p>7- It is commendable the appointment of a Director for overseeing the overall implementation of the project (component c.).</p>	<p><i>The team thanks the reviewers for this comment. No revision needed.</i></p>
<p>8- The Mais Ambiente Program, which the CAR is part of, certainly has a complex organizational structure. It seems that many planned activities under the present Investment Plan are currently undertaken (or have been so) in other regions and circumstances. Showing the results of those past and present experiences, and clearly stating their differences and similarities with the current project would much help envisaging the likely performance of the Mais Ambiente program in the Cerrado, no matter how much those experiences were in the end incorporated to the final design of the current project.</p>	<p><i>CAR initiatives are being applied in 52 municipalities in the Amazon, including the list with high rate of deforestation, in accordance with the strategies of the Mais Ambiente Program. In less than 2 years CAR in 8 municipalities already cover about 80% of the private landholdings and 2 municipalities have left the list.</i></p> <p><i>The same strategies are being applied in CAR pilot projects underway in the Santa Catarina State, South region of Brazil where more than seven hundred (700) landholdings have been registered. The lessons learned from these efforts will be included in the design of project 1.1. Additional information is also available in the website of the MaisAmbiente Program (http://www.maisambiente.gov.br/).</i></p>
Project 1.2- ABC Plan	Response to comments
<p>9- Co-benefits. The institutional co-benefits are not as clear and distinct as the other two, with due exception of the improvement of the overall efficiency of the implementation of ABC plan.</p>	<p><i>The text was revised to better reflect the institutional co-benefits. A key institutional co-benefit is “fine-tuning the recommended technologies”. This will strengthen the potential of replication of the activities in other regions and will increase the level of acceptance of the practices and technologies by the farmers. Another key co-benefit is improving the operational and economic/financial attractiveness of the ABC Plan while improving the efficiency from the social & environmental standpoints.</i></p>
<p>10- There are some issues of either editorial or informational nature that should be addressed to improve the transparency of the current IP. The editorial issue is that the source of the data displayed in the table A1.2 is not given. Informational issues refer to the agricultural</p>	<p><i>The reference for Table A1.2 is now included in the text as well as information on the average size of a smallholder’s patch of land or farm. It is important to clarify that as stated in in the text, the Brazilian National Policy on Climate Change asks for the preparation of sectoral plans for mitigating and adapting to climate change, with a view to consolidate a low carbon economy and meeting the national voluntary commitments announced under this policy.</i></p>

<p>practices recommended in the ABC Program. Some information on the experience gathered from and the results of the implementation of some or all of those practices in other biomes, or in the Cerrado but in farms larger than the ones focused by the ABC Plan should be provided and discussed (see Table 2). A useful piece of information for assessing the current project would be the average size of a smallholder’s patch of land or farm.</p>	<p><i>The Sectoral Plan for the Mitigation and Adaptation of Climate Change for a Low Carbon Emission Agriculture (ABC Plan) was prepared with technical support from Embrapa based its long-term experiments throughout the country which led to the selection of the main practices eligible in the plan. Many of these practices, as for example no-tillage and integrated cropping systems are well known low carbon practices and are being slowly adopted by private sector. The ABC plan intends to support a faster transition from the current practices to the proven low carbon practices already tested in Brazil. These practices do improve environmental and economic sustainability with significant co-benefits for reduction of greenhouse gas emissions and enhancement of soil carbon stocks.</i></p>
<p>11- it is well known that no-till increases the carbon stock in soils, but in some soil types or soil-moisture levels or depending on nitrogen-fertilization rate or the practice of monoculture emissions of N₂O, a greenhouse gas about 300 times more powerful than CO₂ as warming agent, may substantially increase thus reducing the climate mitigation power of the practice. Further, the ABC Plan favours the plantation of trees for industrial use and carbon sequestration. Depending on the species and the rotation regime chosen those plantations could negatively affect the availability of groundwater without much increasing the amount of carbon sequestered in the soil—the most likely situation in the case of not accounting for the carbon content in timber.</p>	<p><i>Different studies (please see list below) conducted in the Cerrado region, indicated that N₂O emissions are very low even under N fertilization. Low soil N₂O fluxes are related to low NO₃-availability (NH₄ is the dominant inorganic N form) and aerobic conditions with WFPS lower than 60%. In general, Oxisols in the Cerrado region are well-drained, relatively N-limited and exhibit low nitrification rates. Only rarely does NO₃- production exceed the demand by microorganisms and plant roots. Moreover, soils under no-till systems preserve a structure similar to those under native vegetation, especially from 0 to 5 cm depth, favoring good soil aeration. Although low fluxes of N oxides were observed in most of the study areas, agricultural practices could induce pulses of NO-N and N₂O-N but these pulses are short-lived.</i></p> <p><i>The ABC Plan considers plantation of exotic as well as the plantation of native species in biodiverse stands and in consortoria with annual crops and pastures. The plantation in previously cleared areas of some exotic species with well-known energy potential is an important component to reduce the current pressure of deforestation to produce charcoal from native Cerrado species, as well as to attend local demands for timber forest products. Changes in forest cover (resulting from plantation of exotic and native trees or from deforestation) in the Cerrado region will be monitored through the project 2.1 and 2.2 in order to provide a regional consistent evaluation of carbon stocks.</i></p> <p><i>References on N₂O emissions in the Cerrado region:</i></p> <p><i>Cruvinel, E. B. F., Bustamante, M.M.C., Kozovits, A.R., Zepp R.G. Soilemissions of NO, N₂O and CO₂ from croplands in the savanna region of central Brazil. 2011. Agriculture, Ecosystems and Environment, 144:29-40.</i></p>

	<p><i>Carvalho, A. M. de ; Bustamante, M. M. C. . Emissões de NO, N2O e CO2 em agroecossistemas do Cerrado. Documentos. Embrapa Cerrados, v. 188, p. 1-26, 2007.</i></p> <p><i>Carvalho, AM, Bustamante, MMC, Kozovits AR, Miranda, LN, Vivaldi, LJ, Sousa, DM. Emissões de NO e N2O associadas à aplicação de uréiasob plantio direto e convencional. 2006. Revista de Pesquisa Agropecuária Brasileira, 41.</i></p> <p><i>Pinto, A.S.; M.M.C. Bustamante, M.R.S.S. Silva, K. Kisselle, M. Brossard, R. Kruger, R. Zepp, R. Burke. 2006.Effects of different treatments of pasture restoration on soil trace gas emissions in the Cerrados of Central Brazil. Earth Interactions, v. 10, n. 1, p1-26,</i></p> <p><i>Varella, R. F., Bustamante, M.M.C, Pinto, A.S., Kisselle, K. W., Santos, R.V., Burke, R., Zepp. R., Viana, L.T. 2004. Soil fluxes of CO2, CO, NO and N2O from an active old-pasture and from native savanna in Central Brazil. EcologicalApplications 14(4): S221-S231.</i></p> <p><i>Pinto, A.S., Bustamante, M.M.C., Kisselle, K., Burke, R., Zepp, R., Viana, L.T., Varella, R.F., Molina, M. 2002. Soil emissions of N2O, NO and CO2 in Brazilian Savannas: effects of vegetation type, seasonality and prescribed fires. Journal of Geophysical Research 107 (D20): 8089-8096.</i></p> <p><i>Davidson, E.A., Bustamante, M.M.C., Pinto, A.S. 2001.Emissions of Nitrous Oxide and Nitric Oxide from Soils of Native and Exotic Ecosystems of the Amazon and Cerrado Regions of Brazil.The Scientific World 1(S2): 312-319.</i></p> <p><i>For a review:</i></p> <p><i>Bustamante, M.M.C, Keller, M., Silva, D.A. Sources and sinks of trace gases in Amazonia and Cerrado. In: "Amazonia and Global Change" (edited by Michael Keller Mercedes Bustamante, John Gash, Pedro Silva Dias) published by the American Geophysical Union (2009) p.337-354.</i></p>
<p>12- The current consultants think that the ABC Plan should be implemented as a pilot project in suitably chosen demonstration places in the Cerrado. Once the real environmental and economic impacts of menu of production and management proposal were assessed, the ABC Plan component of the present project could be</p>	<p><i>Here is important to remark that the ABC Program and Plan are part of the approved policies that comprise the Brazilian National Policy on Climate Change and involves much larger resources (BRL 3 billion in 2012) than those expected from the FIP. The central objective of project 1.2.is to tackle the barriers that are currently hampering the access of rural producer to the resources available by the ABC Plan (i) lack of knowledge by farmers about the plan; (ii) financial agents unaware of the plan and therefore unable to offer its</i></p>

<p>extended to the whole Cerrado Biome.</p>	<p><i>benefits to their clients; (iii) the lack of technical assistance services to help farmers undertake projects using practices recommended by the Plan; and (iv) facilitating non-compliance with environmental legislation, mainly concerning RLs and APPs, without which credit cannot be accessed by farmers).</i></p> <p><i>As stated in answers 10 and 11 above, the practices supported by the ABC Plan have already been tested in different situations and some of them are already been increasingly adopted in some regions. Nevertheless, the ABC Program and Plan have their own monitoring and evaluation system that assess potential impacts.</i></p>
<p>Project 2.1- NFI and NFIS</p>	<p>Response to comments</p>
<p>13- Close coordination and collaboration with all other projects, in particular with project 1.1 and project 2.2. is considered critical for the successful implementation of project 2.1.</p>	<p><i>We agree with the reviewers’ comment. Coordination and collaboration between all projects will be crucial for the success of the BIP. Details on this topic are presented in the section about “Implementation Arrangements” (see response to comment 2).</i></p>
<p>14- It is also very important to seek additional co-financing of state and national funding sources, to guarantee the implementation of the project beyond the FIP financing timeline.</p>	<p><i>The Brazilian Forest Service and the Ministry of Environment are working on strategies to provide additional co-financing, including from States’ governments. In other biomes, States are contributing to implement NFI as they are primary users of its information. States are also important partners for implementing the CAR and ABC programs and the respective co-financing will be considered in the project design phase.</i></p>
<p>Project 2.2- Early Warning and Monitoring Systems</p>	<p>Response to comments</p>
<p>15- The consultants would like the Brazilian government to take into consideration of a possible change of component b of project 2.2 (monitoring vegetation change) to component d) of project 2.1, (implementation of the National Forest Inventory), so that the vegetation mapping becomes an integral part of a well-designed forest inventory and the NFIS.</p>	<p><i>The team agrees that 21. 2.2 should work in close collaboration and has designed the BIP to reflect so. We would like to clarify that the monitoring of vegetation cover does not include the mapping of the type of vegetation (which type of Cerrado) and therefore does not directly overlap with the forest inventory. In addition, the projects are based on the current division of responsibilities the National level. MCTI is responsible for leading the monitoring of change is area under forest cover while the Forest Service is responsible for the inventory. Such shared responsibilities have been working well in the Amazon. In order to ensure the same success in the Cerrado the component b of project 2.2 will be conducted under close collaboration with project 2.1. and information generated by the remote sensing monitoring</i></p>

	<p><i>will be included in the NFIS. The project 2.2 will deal with forest cover change, while the project 2.1 (NFI) will use the same dataset (vegetation mapping) for producing results by forest types and conditions, including biomass and carbon stocks. The synergies between the projects will be foster by the coordination of the BIP (see response to comment 2). Additionally, the Ministry of Environment and Ministry of Science, Technology and Innovation have already a long-term collaboration regarding the monitoring strategies for the Amazon. The development of monitoring strategies for the Cerrado will involve new partners in a multi-institutional network under the coordination of both ministries.</i></p>
Final comments	Response to comments
<p>16. The proposal lacks a clear vision of how to estimate the potential impact of the projects on GHG mitigation and its cost-effectiveness</p>	<p><i>These aspects were considered above (see above response to comments 1, and 3).</i></p>
<p>17. Public consultation of the IP has taken place, both during direct contact with the stakeholders and via internet. Most of the events were dominated by representatives of governmental agencies with relatively little participation of other sectors. Particularly the little participation of the private sector (the main stakeholder of the proposal) has to be dealt with, in order to improve the likely success of the BIP.</p>	<p><i>We recognize that a stronger involvement of the private sector in the public consultation process would be desirable. We plan to address this point along the development of the activities of BIP through the interactions with representatives of the different sectors in the CONACER (please see section on “Implementation arrangements”) and through communication and capacity building actions. Periodically reviews of the activities to be conducted by the Executive Committee will include the feedbacks of different sectors and stakeholders.</i></p>