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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT PAPER

FOR

A SMALL RETF GRANT

IN THE AMOUNT OF US\$1,053,000

TO THE

FUNDAÇÃO DE CIÊNCIA, APLICAÇÕES E TECNOLOGIA ESPACIAIS – FUNCATE

FOR A

BRAZIL CERRADO CLIMATE CHANGE MITIGATION

PLATFORM OF MONITORING AND WARNING OF FOREST FIRES IN THE BRAZILIAN
CERRADO PROJECT

December 12, 2014

Environment and Natural Resources Global Practice
Brazil country Management Unit
Latin America and the Caribbean Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective September 18, 2013)

Currency Unit = Brazilian Real

US\$1.00 = R\$2.3

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

APP	<i>Área de Preservação Permanente</i> (Area of Permanent Preservation)
BCCCMTF	Brazil Cerrado Climate Change Mitigation Trust Fund
CAR	<i>Cadastro Ambiental Rural</i> (Rural Environmental Cadastre)
CPS	Country Partnership Strategy
CQS	Selection Based on Consultant's Qualifications
FBS	Fixed-Budget Selection
FM	Financial Management
FUNCATE	Fundação De Ciência, Aplicações e Tecnologia Espaciais
GHG	Greenhouse Gases
GoB	Government of Brazil
IFR	Interim Financial Report
INCRA	<i>Instituto Nacional de Colonização e Reforma Agrária</i> (National Institute for Colonization and Agrarian Reform)
INPE	<i>Instituto Nacional de Pesquisas Espaciais</i> (National Institute for Space Research)
IPR	Independent Procurement Review
LCS	Least-Cost Selection
M&E	Monitoring and Evaluation
MMA	<i>Ministério do Meio Ambiente</i> (Ministry of Environment)
NCB	National Competitive Bidding
NGO	Nongovernmental Organization
PPCerrado	<i>Plano de Ação para Prevenção e Controle do Desmatamento e das Queimadas no Cerrado</i> (Action Plan to Prevent and Control Deforestation in the Cerrado Biome)
QBS	Quality-Based Selection
QCBS	Quality- and Cost-Based Selection
RL	<i>Reserva Legal</i> (Legal Reserve)
SBD	Standard Bidding Document
SICAR	<i>Sistema Nacional de Cadastro Ambiental Rural</i> (Rural Environmental Cadastre System)
SISNAMA	<i>Sistema Nacional do Meio Ambiente</i> (National Environmental System)
SOE	Statement of Expenditure
SSS	Single-Source Selection
TORs	Terms of Reference

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BRAZIL
BRAZIL CERRADO CLIMATE CHANGE MITIGATION
PLATFORM OF MONITORING AND WARNING OF FOREST FIRES IN THE
BRAZILIAN CERRADO PROJECT
TABLE OF CONTENTS

	Page
I. STRATEGIC CONTEXT	9
A. Country Context.....	9
B. Sectoral and Institutional Context.....	12
C. Higher Level Objectives to which the Project Contributes	14
II. PROJECT DEVELOPMENT OBJECTIVES (PDO)	15
A. PDO.....	15
Project Beneficiaries	15
PDO-Level Results Indicators	15
III. PROJECT DESCRIPTION	16
A. Project Area	16
B. Project Components	16
C. Project Financing	17
IV. IMPLEMENTATION	17
A. Institutional and Implementation Arrangements	17
B. Results Monitoring and Evaluation	18
V. KEY RISKS AND MITIGATION MEASURES	18
A. Overall Risk Rating Explanation	19
VI. APPRAISAL SUMMARY	19
Annex 1: Results Framework and Monitoring	23
Annex 2: Detailed Project Description.....	24
Annex 3: Implementation Arrangements	27

DATA SHEET

BRAZIL

Brazil Cerrado Climate Change Mitigation
Platform of Monitoring and Warning of Forest Fires in the Brazilian Cerrado Project

Small RETF Grant Project Paper

LCR

GENDR

Basic Information			
Date:	December 12, 2014	Sectors:	General agriculture, fishing and forestry sector: 50% Public administration–Agriculture, fishing and forestry: 25% Information, Communication and Technology: 25%
Country Director:	DeborahWetzel	Themes:	Climate change: 50% Land administration and management: 35% Biodiversity: 15%
Practice Manager/Director:	Emilia Battaglini, Acting/ Paula Caballero	EA Category:	C
Project ID:	P149189		
Instrument::	Technical Assistance		
Team Leader(s):	Bernadete Lange, GENDR		
Recipient: Fundação de Ciência, Aplicações e Tecnologia Espaciais - FUNCATE			
Executing Agency: National Institute for Space Research			
Contact:	Alberto Setzer	Title:	Researcher
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Project Implementation Period:	Start Date: December 15, 2014	End Date:	December 31, 2017
Expected Effectiveness Date: December 15, 2014			
Expected Closing Date: December 31, 2017			
Project Financing Data(US\$M)			

<input type="checkbox"/> Loan	<input checked="" type="checkbox"/> Grant	<input type="checkbox"/> Other							
<input type="checkbox"/> Credit	<input type="checkbox"/> Guarantee								
For Loans/Credits/Others									
Total Project Cost:	1.053	Total Bank Financing:							
Total Cofinancing:		Financing Gap:							
Financing Source									
		Amount(US\$M)							
BORROWER/RECIPIENT									
IBRD									
IDA: New									
IDA: Recommitted									
Others: DEFRA		1.053							
Financing Gap									
Total		1.053							
Expected Disbursements (in US\$ Million)									
Fiscal Year	2015	2016	2017						
Annual	300	400	353						
Cumulative	300	700	1053						
Project Development Objective(s)									
The Project's main objective is to facilitate the monitoring, analysis and early detection of forest fires by using the TERRA-MA ² -Queimadas to support decision making among environmental managers in the <i>Cerrado Biome</i> .									
Components									
Component Name		Cost (US\$ Million)							
Development of a Platform to monitor, analyze, and early detection of forest fires		0.931							
Project Administrative and Financial Management		0.122							
Compliance									
Policy									
Does the project depart from the CAS in content or in other significant respects?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>						
Does the project require any exceptions from Bank policies?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>						

Have these been approved by Bank management?	Yes []	No [X]
Is approval for any policy exception sought from the Board?	Yes []	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01		X
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36	X	
Pest Management OP 4.09		X
Physical Cultural Resources OP/BP 4.11		X
Indigenous Peoples OP/BP 4.10	X	
Involuntary Resettlement OP/BP 4.12		X
Safety of Dams OP/BP 4.37		X
Projects on International Waters OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X

Legal Covenants

Name	Recurrent	Due Date	Frequency
Technical Cooperation Agreement between FUNCATE and INPE signed		90 days after the date of signature of this Agreement	

Description of Covenant

Signed and effective TCA referred to in Section 2.03 (b) of the Annex to this Agreement (Effective Date). The offer of this Agreement shall be deemed withdrawn if the World Bank has not received the countersigned copy of this Agreement within 90 days after the date of signature of this Agreement by the World Bank, unless the World Bank shall have established a later date for such purpose.

Team Composition

Bank Staff

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Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Brazil	State of Bahia	Cerrado Biome			
Brazil	State of Maranhão	Cerrado Biome			
Brazil	State of Piauí	Cerrado Biome			
Brazil	State of Tocantins	Cerrado Biome			

I. STRATEGIC CONTEXT

A. Country Context

The Brazilian Cerrado biome and Forest Fires

1. The Brazilian Cerrado is the second largest biome in Brazil and South America (24 percent of the Brazil's total land area). In this context, the Cerrado Biome is important not only as the savanna with the world's largest biodiversity, but also because the large amounts of carbon it stores, with about 70 percent occurring in the soil and underground biomass.
2. The Cerrado is a strategic biome both for economic and environmental reasons and also for food security. The Cerrado became Brazil's major producer and exporter of important cash crops and beef. The rapid expansion of agriculture in the Cerrado has caused the conversion of natural vegetation to alternative land uses (deforestation) as well as the increased use of slash- and-burn as an agricultural practice.
3. The deforestation rate in the Cerrado has been high over the last decades. In 2010, the biome had lost about 49 percent, or 1.0 million km², of its native vegetation cover: about 4.5 percent in the 2002–2010 period. Although the Cerrado's deforested area in 2010 was the same size as that of the Brazilian Amazon in the same year (6,400 km²), it represented a larger percentage of the biome (0.32 percent versus 0.15 percent).
4. One of the main environmental issues faced by Brazil is the occurrences of forest fires and burnings. Greenhouse Gas (GHG) emissions resulting from these fires and burnings make Brazil one of the main contributors to the increase of greenhouse gases emissions in the World. Besides contributing to Climate Change, forest fires and burnings pollute the atmosphere, generate economic and social losses, expedite the desertification process and loss of biodiversity, and increase deforestation.
5. The Cerrado contains a diverse mosaic of grasslands, savannas, woodlands, and forests. In the Cerrado fires play a key role in its ecological functioning. Eiten (1975) estimated the average frequency of fire set by indigenous people of the Cerrado in Mato Grosso, Brazil, to be 3–5 y. Among the plant adaptations to these environmental variables are the presence of below ground meristematic and storage organs¹.
6. Although fire is considered one of the determinants of the Cerrado vegetation, as it is for most savanna ecosystems, the rapid occupation of Cerrado Biome has changed the natural fire regime (season and frequency of burning) with consequences for the vegetation structure and composition.
7. Land use change has altered the natural burning regime. For instance, fire from prescribed burning used to induce pasture regrowth during the dry season (3 to 5 months) often escapes and spreads to larger areas. The increased frequency of fire contributes to degradation processes and

¹ Rachid-Edwards 1956, Rawitscher 1948; Rizzini & Heringer 1961, 1962).

reduces the biomes' resilience to natural disturbances caused by extreme drought and fire itself.

8. The use of fire for land management was identified as an issue during the 80s, when satellite images detected the excess use of fire in the Amazon and in the country in general, and scientific studies were able to register all of its negative impacts to the environment locally, regionally and globally.

9. Ecosystem experiments and modeling show that change in land cover, due to the excess use of fire, is altering the hydrology and affecting carbon stocks and fluxes. They also show that the biennial fire regime is changing the physiognomies of Cerrado *sensu stricto* and *campo-sujo* to an even more open form, with grasses as the major component of the herbaceous layer, which favors the occurrence of more intense and frequent fires. It is estimated that 20% of its cover is burned yearly.

10. The influence of fire on vegetation composition and structure is a function of the fuel consumption and fire intensity which are influenced by weather conditions at the time of burning, topography and fuel moisture content (Chandler *et al.* 1983, Pyne 1984).

11. While natural fires may not result in significant disruptions in the carbon balance of the Cerrado ecosystem, deforestation, slash burning and replacement by a crop monoculture may shift the functional role of trees and belowground pools from carbon sinks to atmospheric sources. In addition to altering carbon budget through slash burning and belowground carbon depletion, large scale crop conversions would also result in great losses of plant diversity diminishing the potential for ecosystem recovery or restoration (Andrade de Castro and Kauffman, 1998).

12. In this context, in 1989, the Brazilian Institute for the Environment and Renewable Natural Resources (*Instituto Brasileiro de Meio Ambiente e dos Recursos Naturais – IBAMA*) established the National Center of Forest Fires Prevention and Combat (*Centro Nacional de Prevenção e Combate aos Incêndios Florestais – PrevFogo*), which is responsible for promoting educational activities, research, monitoring and control of burnings, and prevention and combat of forest fires in the entire country.

13. Furthermore, since 1998, the National Institute for Space Research (*Instituto Nacional de Pesquisas Espaciais - INPE*) provides data on prescribed burning and forest fires².

14. The current ‘*Queimadas*’ system includes the following basic components: (i) detection of hotspots in ~250 image/day from nine different satellites; (ii) estimation of fire risk using weather data from the last 120 days, and numerical forecasts for 5 days in advance (and on a monthly basis); (iii) support to users with special operational products (Ibama, ICMBio, state environmental agencies, fire brigades, etc). The *Queimadas* system³ has been in continuous development, generating dozens of different products, including email alerts of fires detected in protected areas, and daily reports of the fire situation on vegetation, and state/country level statistics.

² <http://www.inpe.br/queimadas/>

³ See <http://www.inpe.br/queimadas> for details of the system.

15. However, the environmental agencies need to have more accurate and more comprehensive information to better implement their fire prevention and combat strategies.

Greenhouse Gas (GHG) Emissions

16. In Brazil, by far the largest share of net CO₂ emissions comes from land-use change, especially the conversion of natural vegetation to crop land and pasture (77 percent of total net CO₂ emissions in 2005). The Cerrado is the second largest biome in Brazil and South America (24 percent of the country's total land area). In this context, land-use change in the Cerrado contributed 22 percent of net anthropic emissions in 2005⁴.

17. Additionally, recent estimates from the Brazilian Ministry of Science, Technology, and Innovation (MCTI) suggest a substantial decrease in Brazil's GHG emissions in 2010 (1,246 MtCO₂e, compared to 2,032 MtCO₂e in 2005), with agriculture becoming the country's main source of GHG emissions (35 percent), followed by the energy (32 percent) and the land use change and forest (22 percent) sectors⁵. In 2010, agricultural emissions in Brazil were mainly due to enteric fermentation (56 percent) and agricultural soils (35 percent), and to a lesser extent due to animal waste management (5 percent), rice cultivation (2 percent) and burning of agricultural residues (1.5 percent).

18. Besides the conversion of natural vegetation for use of livestock and agriculture, the use of fire in the traditional management of pastures and cutting of wood for charcoal production has resulted in large losses of biomass and carbon emissions. In 2010 alone, 74,120 hotspots were detected in the biome, 70 percent of which were located in areas with remnant native vegetation.

The Brazil's National Climate Change Policy and the Forest Code

19. Through the National Policy on Climate Change (Law 12.187/2009 and Decree 7.390/2010), the Government of Brazil (GoB) made a voluntary commitment to reduce by 40 percent the annual rates of deforestation in the Cerrado Biome, based on the average deforestation between 1999 and 2008.

20. Launched in September 2010, the aim of the Action Plan to Prevent and Control Deforestation in the Cerrado Biome (PPCerrado; Decree 5.577/2005) is to promote sustained reductions in the rates of deforestation and forest degradation, as well as in the incidence of burnings and forest fires in this biome. PPCerrado is the operational instrument to implement the National Program for the Conservation and Sustainable Use of the Cerrado Biome⁶ and its actions correspond to the components of that Program. PPCerrado has three components: (i) deforestation control and monitoring; (ii) protected areas and landscape planning; and (iii) promotion of sustainable productive activities.

⁴ Second National Communication to the UNFCCC. Available at: www.mct.gov.br/index.php/content/view/326984.

⁵ Ministério da Ciência, Tecnologia e Inovação (MCTI), 2013. Estimativas anuais de emissões de gases de efeito estufa no Brasil. Available at: <http://gvc.es.com.br/arquivos/177/EstimativasClima.pdf>

⁶ The National Program for the Conservation and Sustainable Use of the Cerrado Biome was formally established by Decree 5.577, November 8, 2005, its objectives are to promote the conservation, recovery and sustainable use of the natural resources, valuing and recognizing its local communities, seeking to revert the negative environmental and social impacts in the Cerrado Biome,

21. Specifically on forest fire prevention and control, the Forest Code (16.651/2012) determines that all landholders must request authorization to the environment state agencies to use fire as a land management tool for agropastoral and forestry activities. It also determines that all environmental institutions (federal, state and municipal levels) that are part of the National Environment System (*Sistema Nacional de Meio Ambiente, SISNAMA*) must update and implement contingency plans to control forest fires, and the Federal Government must establish a national policy on Management, Prevention and Control of Forest Fires.

22. The Forest Code (Law 12.651/2012) requires landholders to request authorization from the State environmental agencies to use fire on vegetation in locations or regions whose characteristics justify its use in agro-pastoral or forestry practices. It also states that Federal, State and Municipal environmental agencies, which comprise the SISNAMA, shall update and deploy contingency plans for fighting forest fires, and that the Federal Government should establish a National Policy for Prevention and Control of Deforestation and Forest Fires.

B. Sectoral and Institutional Context

National Coordination for Policies to Reduce Deforestation and Forest Fires

23. The Ministry of Environment (*Ministério do Meio Ambiente, MMA*) is responsible for formulating policies, defining strategies to implement programs and projects to prevent illegal deforestation and forest fires. This includes the implementation, monitoring and evaluation of the PPCerrado, and the development of the National Policy to Prevent and Control Forest Fires.

National Institute for Space Research (INPE)

24. The National Institute for Space Research (*Instituto Nacional de Pesquisas Espaciais, INPE*) is the main institution responsible for spatial activities in Brazil, its mission is to produce spatial and landscape science and technology.

25. INPE developed the Program to Calculate the Deforestation of the Brazilian Legal Amazon (*Programa de Cálculo do Desflorestamento da Amazonia Legal, PRODES*), which is largest satellite-based system for forest monitoring in the world as it covers an area of 4 million km². This system gives the annual deforestation rate (clearcuts – when all trees are removed from an area) for the year.

26. INPE also hosts a satellite-based system called Detection of Real Time Deforestation (*Programa de Detecção de Desmatamento em Tempo Real, DETER*), based on satellite images. This is an important system which allows INPE to rapidly identify where deforestation is occurring.

27. Besides these two systems, since 1998, in partnership with the MMA, INPE has developed and keeps improving an operational system for monitoring of fire outbreaks and forest fires, and for predicting potential risk of fire through satellite images (www.inpe.br/queimadas). Its products are used by IBAMA/Prevfogo and Chico Mendes Institute for Biodiversity Conservation (*Instituto Chico Mendes de Conservação da Biodiversidade, ICMBio*) to better plan their actions and manage fire in landscapes. Other government institutions also use the

system for various purposes, for instance ONS to prevent shortage of electricity, and Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE) to monitor environmental policies, Ministry of Health to plan their action on municipalities affected by forest fires.

28. With the advance of technologies, the better quality of images provided by the satellites, the simplicity in accessing information has created a new context for environmental management, including the use of fire for landscape management. Considering this new scenario, the proposed Project will support the development and implementation of a tool that will enable monitoring and management of use of fire locally and regionally, this information will be integrated, enabling an overall monitoring.

Relationship to CPS

29. The proposed Project's objectives and strategy are fully in line with the World Bank Group's twin global goals of shared-prosperity and poverty reduction by (i) helping small rural landholders to be in compliance with national environmental law, enabling the access to government rural credit and assistance services, and possible increase in employment and income for landholders and other partners in the value chain generated by farming activities, thus contributing to poverty alleviation, and (ii) developing Government capacity to manage the Cerrado Biome's natural resources for future generation and in a sustainable path to promote climate change resilience.

30. Aligned with the Government's environmental priorities, the objectives of the proposed Project are also fully in line with the current Country Partnership Strategy (CPS 2012-2015), discussed by the World Bank's Executive Directors on November 1, 2011 (Report No. 63731-BR), under Strategic Objective 4: Improving sustainable natural resource management and climate resilience. The engagement in the biome seeks to: (i) support the mapping of degraded areas across all Brazilian biomes and help develop financial incentives to promote their rehabilitation; (ii) support increased sustainability of agricultural production and forestry in the Cerrado; (iii) support efforts by the Federal and selected subnational Governments to further strengthen and integrate their environmental management systems, including those at the metropolitan level, and ensure environmental compliance in rural areas; (iv) help improve the efficiency and effectiveness of environmental licensing and monitoring systems; and (v) help the Federal Government and the private sector to implement Brazil's National Climate Change Plan.

Cerrado Biome approach

31. The World Bank is organizing its approach to Brazil's Cerrado Biome through partnership building with all government levels, private sector and civil society. The Biome approach combines conservation with the promotion of local and regional rural economic development. The Bank is currently supporting a set of initiatives by the Government of Brazil (GoB) to promote sustainable inclusive development through complementary programs and projects: (i) the Sustainable Cerrado Initiative; (ii) the Brazil Cerrado Climate Change Mitigation Trust Fund; and (iii) the Forest Investment Program (FIP): Brazil Investment Plan.

32. Each of the programs or projects will fund investments and activities that support actions of

various implementing agencies and their relationships with other entities and projects or programs. Moreover, the World Bank is supporting the Federal and State Governments' efforts to improve efficiency in the planning and execution of projects.

Brazil Cerrado Climate Change Mitigation Trust Fund (BCCMTF)

33. Launched in 2012 as part of the Cerrado Biome approach, the Brazil Cerrado Climate Change Mitigation Trust Fund (BCCMTF) is a single-donor trust fund with Bank- and recipient-executed components from the Department for Environment, Food and Rural Affairs of United Kingdom (DEFRA).

34. The proposed Project, funded by the Brazil Cerrado Climate Change Mitigation Trust Fund (DCTF), will contribute to enhance the systems used to monitor forest fires and burnings. The other projects under the Brazil Cerrado Climate Change Mitigation Trust Fund (DCTF) are: (i) Rural Environmental Cadastre and Forest Fire Prevention in the State of Piauí; (ii) Rural Environmental Cadastre and Forest Fire Prevention in the State of Bahia; and (iii) ProCerrado Project, to support the MMA in its efforts to coordinate policies to reduce deforestation and forest fires in the Brazilian Cerrado Biome.

35. In addition to this proposed Project, the Forest Investment Plan: Brazil Action Plan (FIP Brazil) will support the Ministry of Science, Technology, and Innovation (MCTI) in the development of systems to monitor changes in the vegetation cover and prevent forest fires in the Brazilian Cerrado, Caatinga and Pantanal biomes. Forest Investment Program⁷ (FIP) resources will be used to improve INPE's system, expanding the forecast and monitoring capacity to include not only hotspots but also to estimate burned area and provide more accurate estimates of greenhouse gases for the biomes of interest.

36. The two Projects will be implemented as a coordinated set.

C. Higher-Level Objectives to which the Project Contributes

37. The proposed Project, as part of the BCCMTF, and along with the other 3 projects under this initiative, will strengthen the GoB's ability to implement its policies to reduce deforestation and forest fires. The new computing platform will provide easy access to a broad variety of monitoring and early-warning forest fires services to the four selected States, as a pilot, and in the future, after it has been validated and functional, it could be escalated to all other states, covering other biomes.

⁷ <https://www.climateinvestmentfunds.org/cifnet/investment-plan/brazils-fip-investment-plan>

II. PROJECT DEVELOPMENT OBJECTIVES (PDO)

A. PDO

38. The Project's main objective is to facilitate the monitoring, analysis and early detection of forest fires by using the TERRA-MA²-Queimadas to support decision making among environmental managers in the *Cerrado Biome*.

39. The new computing platform, "TERRA-MA²-Queimadas", includes ware architecture and a software framework, where the combination allows software to run. It is a new geo-processing tool to monitor fire throughout all biomes in Brazil. This platform aims to play host to a broad variety of monitoring and early-warming forest fires services at a single point, and to simplify users' access to its contents which responds to their expectations. A pilot will focus on the Cerrado, which is the most vulnerable biome in the country as regards to forest fires and burnings. This new tool evolves from a sequence of developments made by INPE to implement monitoring and control solutions for MMA. It also addresses the need to have more accurate and more comprehensive information to support governments and rural communities to better implement their fire prevention and combat strategies.

Project Beneficiaries

40. The main beneficiaries are all institutions that are directly involved with fire management, its combat and prevention. This includes: The Federal and State Governments and other government organizations in the Tocantis, Piauí, Bahia, and Maranhão states, which will be trained to access the new platform.

41. In addition, the Project's indirect beneficiaries will be: (i) researchers who use data on forest fires in Brazil; (ii) the population in general as the new tool will enable the Government institutions to better prepare for fire prevention, which will, likely, reduce forest fire occurrence, consequently reducing the level of pollution in the air, energy black-outs, road accidents due to bad visibility, air traffic impact due to the smoke of the forest fires, and the impact on agribusiness sector due to possible fires reaching their lands.

PDO-Level Results Indicators

42. The PDO will be measured against the following indicators:

- Government institutions provided with capacity building support to improve management of forest resources (number). (core indicator)⁸;
- Number of users (number); and
- Number of accesses to the system monthly (number).

⁸ The Bank's set of core sector indicators to help better measure and aggregate the impact of Bank work in line with its commitment to results, openness, and accountability. The use of Core Sector Indicators in project results frameworks is mandatory for IDA/IBRD operations, where relevant and is highly recommended for recipient-executed trust funds

III. PROJECT DESCRIPTION

A. Project Area

43. The proposed Project will assist INPE in making available a new computing platform for monitoring, analyzing, and early detection of forest fires to support decision making among environmental managers in Brazil, with focus in the Cerrado biome in four states, namely: Maranhão, Tocantins, Piauí, and Bahia. Parts of these states form an area called by some as, perhaps, the last agricultural frontier in Brazil - MATOPIBA.

44. The Project core includes:

- Bahia: The Cerrado Biome occupies 151,348 km² of the total area of 564.693km² in the state of Bahia, and by 2010 almost 38% of it had been deforested.
- Piauí: The Cerrado Biome occupies 93,424 km² of the total area of 251.529,186 km² in the State of Piauí, and by 2010 more than 17% of it had been deforested.
- Tocantins: The Cerrado Biome occupies 252,799 km² of the total area of 277,621 km² in the State of Tocantins, and by 2010 more than 27% of it had been deforested.
- Maranhão: The Cerrado Biome occupies 212,092 km² of the total area of 331,893 km² in the State of Maranhão, and by 2010 more than 25% of it had been deforested.

B. Project Components

45. **Component 1: Development of a Platform to monitor, analyze, and early detection of forest fires** (Estimated Cost: US\$ 931 million). The aim of this component is to develop the new platform, to develop a communication strategy to disseminate the benefits and functions of the platform to the selected states and Federal Government institutions, and to provide training and technical assistance to the selected States and Federal Government users.

46. This component will focus on developing the new platform and providing necessary training to enable users to benefit from the information generated in the new system. Activities envisaged include: (i) the development of a BETA, Provisional and Validated versions of the platform; (ii) the design and implementation of a communication strategy and campaign to launch and disseminate the platform to the environmental managers of the selected states and Federal Government institutions; (iii) the capacity building of the agencies technicians to deal with the platform to enable them to generate reports and fire alerts within their regions; and (iv) the technical assistance required to have the platform functional in the selected states and Federal Government institutions.

47. This component will finance consultants acquisition of equipment and other utilities, travel, design and printing of training materials and dissemination materials, workshops, seminars and

training events.

48. Component 2: Project Management and Supervision (Estimated Cost: US\$0.122 million). The aim of this component is to support the Project's effective and efficient management, administration, monitoring and evaluation. This component will include activities such as: Project coordination, monitoring and reporting; adequate financial management, and procurement.

49. The main activities of this component are: (i) the management plan for Project implementation agreed by the parties (FUNCATE and INPE); (ii) development and dissemination of guidelines and procedures for financial execution; and (iii) regular meetings between the parties to review and adjust the Project's management plan.

50. This Component would finance, *inter alia* studies, technical assistance, computers, training, audits, and operating costs.

C. Project Financing

51. The Project will be funded through a US\$1.053 million grant from the Brazil Cerrado Climate Change Mitigation Trust Fund (BCCCMTF). The Recipient will be a nongovernmental institution that will sign a Grant Agreement with the World Bank.

Project Cost and Financing

Project Components	Project Cost	Grant Financing	% Financing
Component 1. Development of a Platform to monitor, analyze, and early detection of forest fires	931,000	931,000	100
Component 2: Project Management and Supervision	122,000	122,000	100

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

52. Fundação de Ciência, Aplicações e Tecnologia Espaciais - FUNCATE will manage the Project in close coordination with the primary partner the National Institute for Space Research INPE. FUNCATE will manage the technical group that will develop the new platform in coordination with INPE.

53. FUNCATE is accredited with the Ministry of Education and the Ministry of Science and Technology as foundation to support government research and development organizations. It is closely related to and works with INPE, and thus has vast experience in the interpretation of remote sensing images and monitoring of forest fires. A Grant Agreement will be signed

between the Bank and FUNCATE.

54. FUNCATE and INPE will technically implement the Project and will monitor and evaluate the Project (including its indicators). FUNCATE will also implement the organizational structure needed for executing the Project.

55. As program coordinator, the Ministry of Environment (MMA) will provide coordination support to oversee the progress of work and achievement of results.

B. Results Monitoring and Evaluation

56. The monitoring and evaluation (M&E) system will be led by FUNCATE. M&E will be conducted in accordance with: (i) the BCCCMTF monitoring and evaluation plan to be prepared; and (ii) established BCCCMTF rules and procedures. FUNCATE will have primary responsibility for tracking technical progress related to Project outputs and outcomes. Project progress reports will be prepared and submitted to the Bank and MMA twice a year.

C. Project Sustainability

57. The institutional sustainability of the project will be ensured through the use of TERRA-MA²Q, which should be operational, after it has been validated, for at least 10 years before another update of the system is required, and this maintenance and update should be included under GoB's *Plano Plurianual* (PPA). Also, after the new platform has been tested and implemented in the selected states and federal government's institutions, it will be expanded to the other federative units of Brazil, and accessible to anyone with an internet connection.

58. The new platform will benefit MMA, the States and local governments with regard to the long-term decision making regarding forest fires prevention.

V. KEY RISKS AND MITIGATION MEASURES

Stakeholder Risk	Risk Rating	Mitigation Measures
Implementing Agency Risk		
Capacity	Low	FUNCATE has ample experience in implementing World Bank projects, they were responsible for a Rain Forest Unit (RFU) project and had a Satisfactory performance. Additional training and technical assistance have been undertaken so that FUNCATE can efficiently and effectively manage Project resources.
Governance	Low	The Project will be carried out by an NGO, with the aim of streamlining procurement processes, in collaboration with INPE.
Project Risk		
Design	Moderate	The Project's technical implementation is complex since it includes actions by FUNCATE and INPE, with supervision of MMA. Both institutions will need to be staffed with technical employees to properly implement the project. The Project's feasibility and success are highly dependent on the usage that the information generated by the new platform will provide to the State and Federal Government

		institutions.
Social and Environmental	Low	The Project would not have any direct negative impact on the environment. The ability to better monitor forest fires will enable Government institutions to be prepared and able to better plan actions of forest fire prevention and combat.
Program and Donor	Low	
Delivery Monitoring and Sustainability	Low	FUNCATE and INPE have the necessary tools monitor the implementation of the platform closely to ensure that results are being achieved as planned. Since the new platform will be based in INPE's webpage, its availability and accessibility is guaranteed to anyone who has an internet access.
Overall Implementation Risk	Low	

A. Overall Risk Rating Explanation

59. The following is the principal risk inherent in the proposed Project design: the Project's success is highly dependent how useful the information will be to the State and Federal Government institutions.

60. Considering that INPE is one of the most advanced institutes dealing with information technology and providing spatial information around the world, and that the new platform will be developed based on the feedback that INPE receives from government institutions that need the information to better manage/plan their forest fires prevention plans and activities, the technical risk of this project is very low. Also, FUCANTE is a Foundation with recognized success in implementing various projects, which facilitates the implementation of Bank guidelines upfront.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

61. The principal benefit of the project would be the knowledge produced and made available to users. The value of this benefit cannot be readily quantified. The Project was designed specifically to maximize sustainability and efficiency. To this end, it will invest in activities that seek an optimum combination of immediate and long-term benefits.

62. The Project's rational considers the costs against the benefits or effectiveness of actions to reach a set of measures that maximizes the expected results for a specific public policy. In this case, it means enhancing the ability to monitor, analyze, and early detect forest fires to support decision making among environmental managers.

B. Technical

63. INPE is a worldwide leader in large-scale detection and mapping of land clearing and land use in tropical forests. The Project will focus in the implementation of the new computing

platform, which will enhance the ability to monitor, analyze, and early detect forest fires to support decision making among environmental managers. Potentially enabling them to better prevent forest fires, and be better prepared to combat forest fires, which will not have any negative environmental impacts.

C. Financial Management

64. The project's financial management arrangements are based on the Financial Management Assessment Review (FMA) undertaken at FUNCATE in July 28, 2014 and was performed in the World Bank's office in Brasília, in accordance with the following: (i) OP/BP 10.00 (updated on July 1, 2014) and BP14.40 (Trust fund, revised July 2013). The grant will be implemented and executed by FUNCATE. The objective of the assessment was to assess the adequacy of financial management arrangements for the Project. The conclusion is that FUNCATE has satisfactory financial management arrangements in place, including budget and accounting practices and internal control mechanisms to meet the Bank's minimum requirements.

65. All financial transactions will be made by the financial department using existing financial reporting information system: TOTVs which allows a proper tracking of source of funds to project expenditures. For monitoring purposes, FUNCATE will prepare quarterly Project Interim Financial Reports (IFRs) and submit them to the Bank within 45 days after the end of each quarter.

66. **Disbursement.** The Bank will disburse the proceeds of the grant to a separate Designated Account in Brazilian Reals (R\$) in a commercial bank satisfactory for the Bank and managed by FUNCATE. Payments for goods and services for the Project will be made directly from this account. All disbursement related details will be determined at the Disbursement Letter. Payments made in respect of grant activities will be included in the Summary Sheets and Statement of Expenditures.

67. **Audits.** An external audit of the Project will be done annually in line with Bank policy. The audit is expected to be done by a private firm. The audit will be done in accordance with international audit standards by an auditor acceptable to the Bank. The audit report will be delivered to the Bank within six months of the Brazilian's fiscal year-end (June 30 of each year). The auditors will issue an opinion over the financial statements, grant contractual agreements, and the Project designated account. In addition, the auditor will issue a Management Letter on Project accounts and internal controls. Audit reports will be subject to the World Bank's policy on Access to Information. The Financial Management Assessment is available in the Project Files.

D. Procurement

68. Procurement will be carried out by FUNCATE. Its procurement is processed in-house by local staff. An assessment of FUNCATE's capacity to implement procurement actions for the project was carried out by the Bank in June 2010, followed by a procurement post-review in December 2011, which confirmed their satisfactory performance. No additional assessment is needed under this grant. The assessment reviewed FUNCATE's organizational structure for

implementing the project, its procurement practices and its capacity to handle procurement in accordance with Bank Guidelines. The amount of funds to be spent by FUNCATE under the project is considered small when compared to its current overall budget.

69. The Procurement Assessment is available in the Project Files.

E. Social

70. The Project will work with environmental agencies. Benefits will accrue to all rural landholders, indirectly, from the improvement of the environmental management promoted by the Project.

71. Key stakeholders associated with this Project have been involved in its preparation, as MMA, IBAMA and ICMBio.

72. The project would not have any negative social impact.

F. Environment

73. The mapping project would not have any negative environmental impact. The project is rated C.

74. The monitoring platform to be implemented under the proposed Project should lead to positive impacts on the natural habitats and health of dry forests, contributing to prior identification of the areas that could be damaged by fire, thus supporting decision-making process and possibly reducing the impacts of such events.

75. In the Cerrado biome, fire prevention and management are areas in which Indigenous Peoples have shown great interest. Thus, the Indigenous Peoples policy is triggered because indigenous peoples' organizations/associations are potential beneficiaries – according to their free and voluntary engagement – in some training activities on the use of the new geo-processing tool for monitoring, analysis, and warnings of burnings and forest fires

76. The environmental indirect benefits of the Project will be: (i) CO₂ emission reduction due to reduce accidental forest fires, and (iii) reduced rate of biodiversity loss, through the maintenance of natural vegetation.

ANNEX 1: RESULTS FRAMEWORK AND MONITORING

Brazil Cerrado Climate Change Mitigation - Platform of Monitoring and Warning of Forest Fires in the Brazilian Cerrado Project

Project Development Objective (PDO): The Project's main objective is to facilitate the monitoring, analysis and early detection of forest fires by using the TERRA-MA²-Queimadas to support decision making among environmental managers in the Cerrado Biome.

PDO Level Results Indicators*	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5				
Indicator: Government institutions provided with capacity building support to improve management of forest resources (number). (core indicator)	<input checked="" type="checkbox"/>	Number	0	0	3	7	-	-	annual	Technical Report	FUNCATE/INPE	Number of Government Institutions using the new platform
Indicator: Number of users of the new platform.	<input type="checkbox"/>	Number	0	0	30	500	-	-	annual	Technical Report	FUNCATE/INPE	Number of users registered to use the new platform
Indicator: Number of accesses to the system monthly	<input type="checkbox"/>	Number	0	0	3000	7000	-	-	annual	Technical Report	FUNCATE/INPE	Number of times the system was accessed per month
INTERMEDIATE RESULTS												
Intermediate Result (Component 1): Development of a Platform to monitor, analyze, and early detection of forest fires												
Platform validated and functional			-	Provisional Version	Validated Version	Validated Version	-	-	Annual	Technical Report	FUNCATE/INPE	
Environmental Managers trained	<input type="checkbox"/>	Number	0	0	45	90	-	-	Annual	Technical Report	FUNCATE/INPE	Number of staff trained.
<i>Instruction Material on the new platform available</i>	<input type="checkbox"/>	Material	0	-	-	Material available	-	-	Annual	Technical Report	FUNCATE/INPE	Material prepared and distributed

*Please indicate whether the indicator is a Core Sector Indicator (see <http://coreindicators>).

**Target values should be entered for the years data will be available, not necessarily annually.

Notes:

- (i) The expected project period is July 1, 2014 to December 30, 2017.
- (ii) The baseline value and annual values of observed forest area fired in each selected municipalities will be provided by the National Institute of Spatial Research (INPE). MMA, as ProCerrado program, will be responsible to

ANNEX 2: DETAILED PROJECT DESCRIPTION

Brazil Cerrado Climate Change Mitigation Platform of Monitoring and Warning of Forest Fires in the Brazilian Cerrado Project

Brazil Cerrado Climate Change Mitigation Trust Fund (BCCMTF)

1. Launched in 2012 as part of the Cerrado Biome approach, the Brazil Cerrado Climate Change Mitigation Trust Fund (BCCMTF) is a single-donor trust fund with Bank- and recipient-executed components from the Department for Environment, Food and Rural Affairs of the United Kingdom (DEFRA).
2. This trust fund will support two-pronged approach: (i) promotion of farmer compliance with the Brazilian Forest Code, based on strengthening the monitoring and enforcement of mandatory reserve requirements through environmental registration of rural properties; and (ii) promotion of controlled burning, prevention of forest fires, replacement of burning by more sustainable agricultural practices and strengthened firefighting capacity.
3. The Project will assist INPE in making available a new computing platform for monitoring, analyzing, and early detection of forest fires to support decision making among environmental managers in Brazil. Mitigation of forest fires mean fewer degraded and more reclaimed areas. In a more global view, this will contribute toward reducing net emissions of greenhouse gases and the conservation of ecosystem services and biodiversity.
4. To date, the BCCMTF is composed of the following Projects:
 - Piauí: Rural Environmental Cadastre and Fire Prevention; Implementing Agency: Fundação Agente; Executor: SEMAR/PI;
 - Bahia: Rural Environmental Cadastre and Fire Prevention; Implementing Agency: Fundação Luís Eduardo Magalhães (FLEM); Executor: SEMA/BA;
 - Monitoring and warning of burning and forest fires in the Cerrado Biome; Implementing Agency: FUNCATE; Executor: INPE;
 - ProCerrado Project;⁹ and
 - Technical Assistance on Climate Change in the Cerrado (Non-Lending Technical Assistance - NLTA): Bank-executed.
5. The proposed Project is part of the BCCMTF. It will support INPE in the development of a new platform that will enhance the ability monitoring, analyzing, and early detect forest fires to support decision making among environmental managers, which will contribute to efforts to

⁹ Project under preparation. Implementing agency will be a NOG.

reduce GHG emissions.

National Policy for Prevention and Control of Forest Fires

6. The Forest Code (Law 12.651/2012) requires landholders to ask the environmental state agency for prior authorization to use fire on vegetation in locations or regions whose characteristics justify its use in agro-pastoral or forestry practices. It also states that federal, state and municipal environmental agencies, which form the National Environmental System (Sistema Nacional do Meio Ambiente, SISNAMA), shall update and deploy contingency plans for fighting forest fires, and that the Federal Government should establish a National Policy for Prevention and Control of Deforestation and Forest Fires.

7. The Project is fully in line with Brazil's National Climate Change Policy (NPCC), which guides domestic policy operations with regards to climate change. The Action Plan to Prevent and Control Deforestation and Fires in the Cerrado Biome (PPCerrado) is one of the sector plans stipulated by the NPCC. As such, it is expected to make a positive contribution to the country's current REDD+ efforts.

Project Area

8. The proposed Project will assist INPE in making available a new computing platform for monitoring, analyzing, and early detection of forest fires to support decision making among environmental managers in Brazil, with focus in the Cerrado biome in four states, namely: Bahia, Maranhão, Piauí and Tocantins.

Project Components

9. Component 1: Development of a Platform to monitor, analyze, and early detection of forest fires (Estimated Cost: US\$931 million). The aim of this component is to develop the new platform, to develop a communication strategy to disseminate the benefits and functions of the platform to the selected states and Federal Government institutions, and to provide training and technical assistance to the selected States and Federal Government users.

10. This component will focus on developing the new platform and providing necessary training to enable users to benefit from the information generated in the new system. Activities envisaged include: (i) the development of a BETA, Provisional and Validated versions of the platform; (ii) the design and implementation of a communication strategy and campaign to launch and disseminate the platform to the environmental managers of the selected states and Federal Government institutions; (iii) the capacity building of the agencies technicians to deal with the platform to enable them to generate reports and fire alerts within their regions; and (iv) the technical assistance required to have the platform functional in the selected states and Federal Government institutions.

11. This component will finance consultants, acquisition of equipment and other utilities, travel, design and printing of training materials and dissemination materials, workshops, seminars and training events.

12. Component 2: Project Management and Supervision (Estimated Cost: US\$122,000). The aim

of this component is to support the Project's effective and efficient management, administration, monitoring and evaluation. This component will include activities such as: Project coordination, monitoring and reporting; adequate financial management, and procurement; and Project financial and technical activities for Project closure.

13. The main activities of this subcomponent are: (i) the management plan for Project implementation agreed by the parties (FUNCATE and INPE); (ii) development and dissemination of guidelines and procedures for financial execution; and (iii) regular meetings between the parties to review and adjust the Project's management plan.

14. The proposed Project will work directly with FUNCATE, INPE and selected states. Benefits will accrue to environmental managers of the selected states and federal government institutions.

Project Financing

15. The Project will be funded through a US\$1.053 million grant from the Brazil Cerrado Climate Change Mitigation Trust Fund (BCCCMTF). The Beneficiary will be a nongovernmental institution, FUNCATE, which will sign a Grant Agreement with the World Bank. The technical implementation will be coordinated between FUNCATE and INPE. As program coordinator, the Ministry of Environment (MMA) will provide coordination support to oversee the progress of work and achievement of results.

Sustainability

16. The institutional sustainability of the project will be ensured through the use of TERRA-MA2Q, which should be operational, after it has been validated, for at least 10 years before another update of the system is required, and this maintenance and update should be included under GoB's Plano Plurianual (PPA). Also, after the new platform has been tested and implemented in the selected states and federal government's institutions, it will be expanded to the other federative units of Brazil, and accessible to anyone with an internet connection.

17. The new platform will benefit MMA, the States and local governments with regard to the long-term decision making regarding forest fires prevention.

Lessons Learned and Reflected in the Project Design

18. The design of the proposed Project draws on the experience and lessons learned from the Brazil Mapping of Amazon Degraded Areas Project (P120490), funded by the Pilot Program to Conserve the Brazilian Rain Forest (PPG7).

19. The specific lessons learned include: (i) Administrative facilities for project implementation. The facilities offered by FUNCATE due its institutional design and operation modalities were essential for project implementation and for the achievement of the expected objectives; and (ii) Articulation and coordination as an asset for territorial planning: Information and the identification of areas of common interest are essential in the context of a policy framework and a Government decision to reduce deforestation in the region.

ANNEX 3: IMPLEMENTATION ARRANGEMENTS

Brazil Cerrado Climate Change Mitigation Platform of Monitoring and Warning of Forest Fires in the Brazilian Cerrado Project

Project Institutional and Implementation Arrangements

20. The Project will be carried out by the Recipient, FUNCATE, in close agreement with the primary partner: INPE. The parties will, in a coordinated manner, jointly implement the actions and control mechanisms.

21. FUNCATE and INPE will have a team dedicated to the Project, including a focal point and a professional to monitor and supervise the overall Project. A Grant Agreement will be signed between the Bank and FUNCATE.

22. FUNCATE is accredited with the Ministry of Education and the Ministry of Science and Technology as foundation to support government research and development organizations. It is closely related to and works with INPE, and thus has vast experience in the interpretation of remote sensing images and monitoring of forest fires. Since 1998, in partnership with the MMA, INPE has developed and keeps improving an operational system for monitoring of fire outbreaks and forest fires and for prediction of potential risk of fire through satellite images (www.inpe.br/queimadas).

23. FUNCATE does not have sufficient permanent technical staff of its own. Instead, it relies on the structure and technical expertise of its associated public sector institution, the National Institute for Space Research (INPE), and other public or private institutions.

24. For purposes of the project, FUNCATE would contract consultants with various technical expertise necessary for the development of the platform and other activities related to the project, and make them available to INPE under a technical cooperation agreement, to be reviewed by the Bank and found satisfactory. No funds would be transferred by FUNCATE to partner institutions under that agreement.

25. FUNCATE will hire a consultant as project manager to oversee and monitor the implementation of the project and other consultants to carry out development of the platform and other activities related to the project. Project management would be located at FUNCATE's headquarters in São José dos Campos, in São Paulo State, Brazil. Most of the technical work, however, would be carried out at INPE's Centers.

26. FUNCATE's team will comprise six staff members dedicated to the Project: the Project Leader; Project Manager; Project Advisor; Chief Financial Officer; Financial Specialist; and, a Procurement Specialist experienced in implementing Bank-financed projects; and an Administrative Assistant.

27. As program coordinator, the Ministry of Environment (MMA) will provide coordination support to oversee the progress of work and achievement of results. Regular Meetings will be

held between FUNCATE, INPE, and MMA for operational planning, monitoring and adjustment of actions.

28. The Terms of Reference (TORs) for hiring the services of a third party, as well as technical specifications of goods needed by the Project, will be prepared by INPE with support from FUNCATE, and FUNCATE will undertake all of the procurement of all goods, non-consultant services and consultant services.

29. FUNCATE in coordination with INPE will implement the Project in accordance with policies, procedures and approaches for implementation, and will monitor and evaluate the Project (including its indicators). FUNCATE and INPE will also implement the necessary organizational structure for Project execution.

Financial Management, Disbursements and Procurement

Financial Management (FM)

30. The Bank carried out a desk review Financial Management Assessment, on July 28, 2014 at FUNCATE (Fundação de Ciência, Aplicações e Tecnologia Espaciais) in accordance with OP/BP 10 (updated on July 1, 2014) and BP14.40 (Trust fund, revised July 2013). The scope of the assessment included (i) an evaluation of existing financial management systems in place to be used for program monitoring, accounting and reporting; (ii) review of staffing requirements; (iii) review of the flow of funds arrangements and disbursement methodology; (iv) review of internal control mechanisms in place; (v) discussion in regard to reporting requirements, including the format and content of IFRs; and (vi) review of internal and external audit arrangements.

31. **Financial Management Assessment Conclusion:** The overall conclusion on the assessment of the executing agency FUNCATE is that the financial management arrangements as set out for this Project satisfy the Bank's minimum fiduciary requirements. The financial management specialist assessed the implementing agency and found the agency's financial management systems to be **Satisfactory** and the associated risk to be **Low**.

32. Financial management supervision will take place every year and include (a) reviewing of quarterly IFRs; (b) reviewing of the auditors' reports and follow-up of any issues raised by auditors in the management letter, as appropriate; (c) participation in project supervision and (d) updating the financial management rating in the Implementation Status Report (ISR).

33. The recipient of the grant will be the FUNCATE. The technical execution will be carried out by FUNCATE and INPE. FUNCATE is responsible to carry out the Project's administrative and financial management tasks, accounting and disbursements. Also, FUNCATE will consolidate and prepare IFRs for reporting purposes. FUNCATE personnel in the fiduciary areas have the education levels, experience and knowledge of processes to adequately perform these functions. However, training on Bank's procedures and policies are new to staff are required.

34. All project budgeting and accounting transactions will run through the system (ERP TOTVS - Protheus 10). All payments will follow the official commitment and payment routine. All transaction processing (recording annual budgets, budget commitments, and payables, authorizing payments, and internal control reviews) would be carried out by FUNCATE that will execute payments and control segregated project bank accounts. These functions are carried out by the Administration and Finance Department of FUNCATE. Other internal control mechanisms includes: review and reconciliation of payments, proper access to systems and segregation of functions and observation of internal administrative codes and procedures.

35. FUNCATE will be the primary responsible for project implementation. All payments will be made by the financial department using the TOTVS system, upon instructions from FUNCATE, once expenditures have been incurred and properly documented. Payments will be made directly from FUNCATE, through the issuance of a payment authorization (autorização de despesa) to service providers and contractors. In order to make payments, the funds should be committed by source, making possible the tracking of grant disbursements to project expenditures, due to this earmarking mechanism within the system (TOTVS). Every quarter, FUNCATE will prepare IFRs for monitoring reasons, showing project execution for the quarter, year and up to date. Though, disbursements will be made through statements of expenditures (SOEs).

36. A project account, in local currency, is opened at a commercial bank, and funds are directly deposited into this account. The IFR will show project expenditures and reconcile advances made into the project account with closing balances, and the Bank's share of actual expenditures. The frequency for reporting eligible expenditures paid from the Designated Account will be quarterly. The Trust Fund will also have a four-month grace period after the closing date, during which the Bank will accept withdrawal application relating to Project transactions incurred before the closing date. All disbursement related details will be determined at the Disbursement Letter.

37. The retroactive financing is allowed for up to US\$100,000 equivalent for payments made during the twelve months immediately before the date of the Grant Agreement, for Eligible Expenditures under Categories 1 and 2 of the disbursement table. All Eligible Expenditures submitted for retroactive financing shall be procured under procurement methods and procedures acceptable by the Bank.

38. FUNCATE, with the support of the financial coordinator, will ensure the timely production of quarterly financial monitoring reports (IFRs) for monitoring reasons. These IFRs will be produced from the TOTVS system and will consolidate the project's financial data for all components. Accordingly, the format and content of the IFRs, agreed with the grantee will cover the following items Financial Reports:

- IFR 1A - Sources and Uses of Funds (by disbursement category, with evidence of the Bank's share in the financing of expenditures, cumulative (project to-date; yearto-date and for the period) vs actual expenditures, including a variance analysis;

- IFR 1B - Uses of Funds by Project Activity or Component, cumulative (project-to-date; year-to-date and for the period) vs actual expenditures, including a variance analysis;

39. FUNCATE’s current external auditors are *BDO Auditores Independientes* that issued unmodified opinion over FUNCATE’s annual financial statements (CY12). For the project, annual financial statements will be audited by independent auditors, satisfactory to the Bank, in accordance with acceptable auditing standards. The external audit will be conducted according to Terms of Reference acceptable to the Bank. Auditors will be required to issue an opinion on project’s financial statements (IFRs), as per Bank guidelines. Auditors will also have to produce a management letter, where any internal control weaknesses will be identified, which will contribute to the strengthening of the control environment. The auditor’s report will be submitted to the Bank no later than six months after the closing of the grantee’s fiscal year, and the annual audit will be financed out of loan proceeds.

40. FM actions to be taken during the first semester of implementation:

- Adaptation of the chart of accounts and IT systems to the project.
- Designation of the financial management team.
- Submission of IFR format for the Bank to provide its no-objection.
- Preparation of draft TORs for audit and submission to the Bank for no-objection.

Financial categories

41. The Table below specifies the categories of Eligible Expenditures that may be financed out of the proceeds of the Project and the percentage of expenditures to be financed for Eligible Expenditures in each Category:

Category	Amount of the Grant Allocated (USD)	Percentage of Expenditures to be Financed
(1) Works, Goods, Non-consulting services, Consultants’ services, and training	931,000	100%
(2) Operating Costs	122,000	100%
TOTAL AMOUNT	1,053,000	

42. For the purposes of this projects the term:

- “Operating Costs” means the operating costs incurred for the purposes of the implementation of the Project including: (A) operation and maintenance of vehicles; (B) incremental office equipment and supplies; (C) shipment costs (whenever these costs are not included in the cost of goods); (D) office supplies; (E) rent for office facilities; (F) utilities; (G) travel and per diem costs for technical staff carrying out supervisory and

quality control activities; (H) communication costs including advertisement for procurement purposes; (I) administrative and operational support staff; and (J) auditing.

- “Training” means the costs associated with the preparation and carrying out of seminars and workshops including, event logistics, transportation, catering, material preparation, course enrollment fees, per diem, and other costs directly related to the preparation and implementation of seminars and workshops.

Procurement

43. The Project will be technically implemented by FUNCATE and INPE, however, FUNCATE will be the only one responsible for procuring goods, works and services as well for selecting consultants, in accordance with the Bank’s procurement policies. FUNCATE will also be responsible for proper contract management. INPE will provide the necessary technical inputs (TORs, technical specifications, etc.) to allow FUNCATE to carry out the procurement process with due diligence.

44. A procurement assessment of FUNCATE’s capacity to implement procurement actions was carried out in June 2010, followed by a procurement post-review in December 2011, which consolidated their satisfactory performance. No additional assessment is needed under this grant. FUNCATE is a solid private foundation and has acquired substantial experience in implementing Bank-financed procurement by executing the RFU Brazil Mapping of Amazon Degraded Areas Project. This positive experience includes preparing bidding and selection documents for different procurement and selection methods, procurement plans, cost estimates, and evaluation reports, reviewing TORs, and preparing cost estimates. Most staff members have participated in training that was offered by the Bank in the past, and have participated in recent training to be up-to-date regarding Bank guidelines and procedures. As all procurement would be carried out by FUNCATE exclusively, no residual risk has been identified, and the risk is rated “LOW”.

45. Procurement for the proposed project would be carried out in accordance with the World Bank’s “Guidelines: Procurement under IBRD Loans and IDA Credits” dated January 2011, and “Guidelines: Selection and Employment of Consultants by World Bank Borrowers” dated January 2011, and the provisions stipulated in the Legal Agreement. The general description of various items under different expenditure category is described below. For each contract to be financed by the Loan, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Recipient and the Bank project team in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

46. Procurement of works. Small works are expected under the Project and would include construction of nurseries/greenhouses. Procurement of small works should be carried out following Shopping procedures as indicated in paragraph 3.5 of the Guidelines. Direct contracting would also be used when the conditions of paragraph 3.7 of the Guidelines are met.

47. Procurement of goods. Goods procured under this Project would include IT, office, and communication, agriculture, firefighting, individual protection and geo-referencing equipment;

vehicles; surveillance tower; cameras; photocopies, promotional items (t-shirts, caps, stationary, etc.), etc. Procurement of Goods would follow National Competitive Bidding (using SDBs agreed with the Bank) or Shopping procedures. Bidding documents must include anticorruption and right-to-audit clauses to be considered acceptable to the Bank, and the legal agreement would need to include a provision that the NCB bidding documents shall be acceptable to the Bank. If the requirements of par. 3.7 are met, Direct Contracting may also be used for the procurement of goods.

48. Procurement of non-consulting services. Procurement of non-consulting services would include geo-referencing and rural land cadaster registration, graphic design, educational material production, etc. Procurement would be conducted using National SBD agreed with or satisfactory to the Bank for all NCB. Bidding documents must include anticorruption and right-to-audit clauses to be considered acceptable to the Bank, and the legal agreement would need to include a provision that the NCB bidding documents shall be acceptable to the Bank. Small-value contracts not to exceed US\$100,000 would follow Shopping procedures. Direct contracting would also be used when the conditions of paragraph 3.7 of the Guidelines are met.

49. In addition, for off-the-shelf goods and readily available non-consultants services, the method known as “pregão eletrônico”, as provided in Brazil’s Law No. 10520, of July 17, 2002, under “COMPRASNET”, the Federal procurement portal (or any other e-procurement system approved by the Bank), may be used in replacement for National Competitive Bidding and Shopping, subject to the following additional procedure, namely, that the bidding documents shall be acceptable to the Bank.

50. Selection of consultants. Consulting services by firms and individuals required for the Project would include a wide array of technical assistance and advisory services, such as the development of electronic systems, map preparation, training and economic diagnostics. Short-lists of consultants for services estimated to cost less than US\$1,000,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions in the Consultant Guidelines. All contracts estimated to cost more than US\$200,000 equivalent per contract, the first process under each selection method, and any single source of consulting services would be subject to prior review by the Bank. Quality- and Cost-Based Selection (QCBS) would be the default method for the selection of firms, but Quality-Based Selection (QBS), Least-Cost Selection (LCS), Selection under a Fixed Budget (FBS), Selection Based on the Consultants’ Qualifications (CQS), and Single Source Selection (SSS) could also be used if the requirements of the guidelines are met. Individual consultants should be selected in accordance with procedures of Section V of the Bank’s Consultant Guidelines.

51. Training related expenditures would include contracts for event logistics, transportation, catering, material preparation, course enrollment fees, and per diem. These contracts would be procured following the agency’s administrative procedures, which were reviewed and found acceptable by the Bank.

52. Operational costs. Operational costs include (A) operation and maintenance of vehicles; (B) incremental office equipment and supplies; (C) shipment costs (whenever these costs are not included in the cost of goods); (D); rent for office facilities; (E) utilities; (F) travel and per diem costs for technical staff carrying out supervisory and quality control activities; (G)

communication costs including advertisement for procurement purposes; (H) administrative and operational support staff; and (I) auditing. These contracts would be procured following the agency's administrative procedures, which were reviewed and found acceptable by the Bank.

53. Procurement Plan. The detailed 18-month procurement plan was approved by the Bank in March 2014. During Project execution, the plan would be updated annually or as required to reflect the Project's actual implementation needs and improvements in institutional capacity. The recommended thresholds for the use of the procurement methods specified in the Loan Agreement are identified in the procurement plan

54. Frequency of procurement supervision: Supervision of procurement would be carried out through prior review supplemented by supervision missions with a post review at least once a year.

Environmental and Social (including safeguards)

55. The Project will focus on environmental management. It will support the environmental agencies' efforts to strengthen environmental management tools aimed at sustainable use of natural resources and reducing illegal forest fires.

56. The Project will work directly with environmental agencies. Benefits will accrue to all rural landholders, directly or indirectly, from the environmental management promoted by the Project.

Monitoring & Evaluation (M&E)

57. The M&E system will be led by FUNCATE in collaboration with INPE. M&E will be conducted in accordance with: (i) the BCCMTF monitoring and evaluation plan to be prepared; and (ii) established BCCMTF rules and procedures. FUNCATE will have primary responsibility for tracking technical progress related to Project outputs and outcomes. Project progress reports will be prepared and submitted to the Bank and MMA twice a year.