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 CO_2 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 CO_2 emissions in that year. However, the relative contribution of the Cerrado to the country's net anthropic CO_2 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 (CH_4) 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 CH_4 emissions from the agriculture sector. Increases in the emissions of CH_4 with time have been mostly driven by the increase of the cattle population over recent years. CH_4 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 (N_2O) 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 N_2O are very low under natural conditions, but clearing of natural vegetation, its burning, and fertilization of agricultural lands has been found to increase N_2O 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 an 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 tCO_2 equivalent in the Investment Plan. It will, however, estimate the potential reduction of emissions in tCO_2 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 objectives[1], principles[2], and criteria[3] of a FIP. It is commendable the appointment of a Director for overseeing the overall implementation of the project (component **c.**).

[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)

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. *Brazil Investment Plan for the Forest Investment Program (FIP) v. 3 – Annexes*

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 objectives[4], principles[5] and criteria[6] to be fulfilled by the FIP contained in the BIP

[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, itmes a); b); c); d); e); g); h); and.j) (FIP, 2009)

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. *Brazil Investment Plan for the Forest Investment Program (FIP) v. 3 – Annexes*

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 CO_2 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 N_2O, a greenhouse gas about 300 times more powerful than CO_2 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 objectives[7], principles[8], and criteria[9] of a FIP.

[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)

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 *Brazil Investment Plan for the Forest Investment Program (FIP) v. 3 – Annexes*

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 objectives[10],, principles[11] and criteria[12].

[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)

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.

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.

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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