



# **BRAZIL: Mitigation and Adaptation to Climate Change**

**Theoretical framework for the  
elaboration of IDB's strategy  
in Brazil**

Carlos Ludeña  
Maria Netto

**Inter-American  
Development Bank**

**Climate Change and  
Sustainability Division**

**Renewable Energy Unit**

**Department of Southern  
Cone Countries**

**TECHNICAL NOTE**

**No. IDB-TN-622**

**August 2011**



# BRAZIL: Mitigation and Adaptation to Climate Change

Theoretical framework for the elaboration  
of IDB's strategy in Brazil

Carlos Ludeña  
Maria Netto



**Inter-American Development Bank**  
2011

**Cataloging-in-Publication data provided by the  
Inter-American Development Bank  
Felipe Herrera Library**

BRAZIL: Mitigation and Adaptation to Climate Change / Carlos Ludeña, Maria Netto.  
p. cm. — (IDB Technical Note ; 622)

Includes bibliographical references.

1. Climate change mitigation. 2. Adaptation. 3. Climatic changes—Brazil. I. Ludeña, Carlos. II. Netto, Maria.  
III. Inter-American Development Bank. Climate Change and Sustainability Division.  
IDB-TN-622

JEL : Q01; Q51; Q20; Q54; Q58; P41; R11; N56

Keywords: Climate Change, Adaptation, Latin America, Caribbean, Mitigation, Brazil

<http://www.iadb.org>

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.

The unauthorized commercial use of Bank documents is prohibited and may be punishable under the Bank's policies and/or applicable laws.

Copyright ©2011 Inter-American Development Bank. All rights reserved; may be freely reproduced for any non-commercial purpose.

*Special thanks to the INE/ECC team for their technical support.*

## Contents

Background and Context .....	1
Institutional framework.....	2
Sector Recent Evolution and Current Situation .....	4
National and International Funds for Project Financing .....	6
Sector Problems and Priorities .....	8
Bank Actions related to Climate Change .....	9
Strategic Framework .....	12
Strategic Objectives.....	12
Necessary Actions to achieve Strategic Objectives .....	13
Expected Results from Bank Intervention .....	15
Indicators .....	17
Risks .....	20
References.....	20
Annex 1: Climate Change Related Activities in Brazil.....	22
Annex 2: Indicators Matrix .....	31



# BRAZIL:

## Mitigation and Adaptation to Climate Change

---

### Background and Context

1. In June 1992 the United Nations Conference on Environment and Development was held in Rio de Janeiro, Brazil. This conference resulted in the creation of the United Nations Framework Convention on Climate Change (UNFCCC), for which Brazil was the first country to sign. Twenty years later, the Rio+20 Conference on Sustainable Development will take place again in Rio de Janeiro on June 4-6, 2012. This event, as well as the “Green” World Cup (*Copa Verde*) in 2014 and the “Green” Olympic Games in 2016 can serve to pave the way for a low-carbon economic legacy in Brazil post 2016.
2. In addition to that, in December 29, 2009, Brazil adopted Law 12.187 which establishes its **National Policy of Climate Change (PNMC)**, which seeks to pursue voluntary actions for the mitigation of greenhouse gas (GHG) emissions. Under the law, Brazil will voluntarily reduce emissions by 36.1%-38.9% by 2020. These actions include the reduction in deforestation in the Amazon (80%) and the *Cerrado* (40%), restoration of grazing land, change in agricultural practices, reduction in energy consumption (energy efficiency, alternative energy sources, etc), stabilization of the share of renewable energy sources in the energy matrix, increased use of biofuels, etc. This presents challenges at the federal, state and municipal level for Brazil, for both public and private sectors.
3. In order to understand the implications of these GHG emissions reduction targets in the Brazilian economy it is important to understand the **sector composition of these emissions in Brazil**. According to the 2010 Second National Communications of Brazil to the UNFCCC, in 2005, the majority of Brazil’s emissions (87.2%) corresponded to carbon dioxide (CO<sub>2</sub>) emissions. Of these, 77% came from land-use change and forestry sector, followed by the energy sector with 19% of total CO<sub>2</sub> emissions. Nitrous oxide (N<sub>2</sub>O) was 7.8% of total GHG emissions, of which the majority (78%) were coming from the agricultural sector, mainly from emissions from soils, including grazing animal emissions. Methane (CH<sub>4</sub>) was 4.8% of total emissions, of which 70% were emissions from the agricultural sector, 17% from land-use and forestry sector and 10% from the waste sector.
4. At the sector level, land-use change and forestry is mainly driven by CO<sub>2</sub> emissions from the Amazon biome (67%) and the *Cerrado* biome (22%). For the energy sector, the majority of emissions come from CO<sub>2</sub> emissions, mainly due to road transport (39%) and the industrial sub-sector (27%). For the Industrial Processes sector, CO<sub>2</sub> emissions is the main driver, coming specially from pig iron and steel (58%), cement (22%) and lime production (8%). For agriculture, CH<sub>4</sub> emissions make up the majority of emissions, and are

driven by enteric fermentation of ruminant hers (90%). N<sub>2</sub>O emissions in agriculture come from grazing animal manure (46%) and indirect soil emissions (32%). Finally, in the waste sector the majority of emissions come from methane generated by waste disposal.

5. Regarding **vulnerability and adaptation to climate change**, according to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2007), the main adverse impacts from climate change that could affect Brazil with high or very high probability, include: a) Exacerbation of water scarcity in arid and semi-arid areas in northeastern Brazil due to a reduction in water supply; b) Increase in rainfall in southeastern Brazil as well as an increase in the frequency and intensity of flooding; c) Risk of losses in biodiversity due to gradual replacement of some semi-arid areas with arid areas in Northeastern Brazil and of tropical forests with savannahs in the eastern region of the Amazon<sup>1</sup> d) Expected increase in sea level that could affect coastal areas, specially mangroves, as well as increased water flows towards the South region of Brazil; e) Exacerbation of erosion problems in the north-east region due to increased rainfall rates, with problems of sedimentation of reservoirs with reduced water supply and storage capacity; f) Increased vulnerability of people and ecosystems due to less frequent and more variable rainfall in the north-east region, which could endanger agricultural production and potential; g) Diminished groundwater recharge in Northeast region of up to 70%; h) Increased incidence of diseases such as diarrhea (related to flooding), schistosomiasis, and public health problems due to smoke from burning fields.
6. Although the changes of climate change may seem distant, there are current events that underscore the need for risk management and vulnerability reduction in Brazil. This was highlighted when in January 2011 more than 1,000 people lost their lives and 8,000 homes were destroyed in mudslides near Rio de Janeiro, in what is called one of the worst-ever natural disasters in Brazil. Additionally, in 2010 flooding affected more than 1,000 townships (20% of all towns), with 470 people killed and 12,000 people losing their houses as a result of natural disasters (Oxford Analytica, 2011). Eight hundred areas have been identified as risk areas, with 500 of those on hillsides where risk of mudslides is high and 300 adjacent to rivers with high risk of flooding.

### Institutional framework

7. Since the beginning of activities related to climate change in Brazil, institutions have been established to address the issue. In 1994, when the Brazilian Congress approved the Climate Change Framework Convention, the responsibility for coordinating the implementation of the commitments under the UNFCCC Framework was assigned to the Ministry of Science and Technology (MCT). To better coordinate government actions in climate change, the government of Brazil created the **Inter-Ministerial Commission on Global Climate Change (CIMGC)**,

---

<sup>1</sup> Vergara and Scholz (2010) highlight the importance of the Amazon dieback as a major adaptation issue facing the Amazon region. The study points out that the tipping point for deforestation in the region is 20%, meaning that beyond this the ecosystem would become unstable and would collapse.

of which the MCT serves as its Executive Secretariat and the Ministry of Environment serves as its Vice-Presidency.

8. The Commission has representatives of the Ministry of External Relations (MRE) and the MCT, which are the political and technical focal points, respectively, on global climate change in Brazil. Other ministries represented in the CIMGC include the Ministries of Agriculture, Livestock and Food Supply (MAPA), Transportation (MT), Mines and Energy (MME), Environment (MMA), Development, Industry and Foreign Trade (MDIC), and Cities (MCid), as well as ministries with more strategic and long-term vision, such as Planning, Budget and Management (MPOG), Finance (MF) and the Executive Office of the Presidency of the Republic (*Casa Civil*). Additionally, the CIMGC is the Designated National Authority (DNA), being in charge of evaluating and approving project activities under the Clean Development Mechanism (CDM) in Brazil.
9. The **Inter-Ministerial Committee on Climate Change (CIM)** was created in 2007 with the task of steering the development, implementation, monitoring and evaluation of the National Plan on Climate Change. The CIM is coordinated by *Casa Civil* and is composed by seventeen federal institutions and the Brazilian Climate Change Forum (FBMC). The FBMC, established in 2000 and chaired by the President of Brazil, has offered a platform to promote awareness and engagement from society regarding climate change issues. Most recently, as the new government came in, Casa Civil has taken the leading voice in matters of climate change, due to the high profile of the upcoming Rio+20 meeting in 2012.
10. The **Executive Group on Climate Change (GEx)**, under the CIM, which is coordinated by the Ministry of Environment, was in charge of developing, implementing, monitoring and evaluating the National Plan on Climate Change. The National Plan on Climate Change was launched in December 2008, and the National Policy on Climate Change was enacted into law in December 2009.
11. Related to research, there are various institutions that include the Brazilian Research Network on Global Climate Change (established in 2007), the National Institute of Science and Technology for Climate Change, the Center for Weather Forecasting and Climate Studies (CPTEC/INPE) and the Earth System Science Center (CCST/INPE). The Brazil Panel on Climate Change (PBMC) was established in 2009 by the Ministry of Environment and the Ministry of Science and Technology to increase the participation of Brazilian scientists in the IPCC process. It provides information and offers technical and scientific support to development and implementation of public policies on climate change, including the PNMC.
12. Given the political structure of Brazil, the role of **State and Municipal governments** will play a vital role in implementing the mitigation and adaptation targets and policies set at the Federal level. Some local governments have set mitigation targets on their own. In 2009, the State Parliament of Sao Paulo approved a Climate Change Bill (Law # 12.798), which sets a GHG emissions reduction target of 20% by 2020. The law



includes instruments, a state communication, emissions inventories, a public registry of emissions, sustainability standards, etc.

13. The **private sector** will also play an important role in both mitigation and adaptation to climate change. Industrial organizations such as the Federation of Industries of the State of Sao Paulo (FIESP), the Brazilian Sugarcane Industry Association (UNICA), the Sao Paulo Stock Exchange (BM&F BOVESPA) have taken an active role in facing the challenges of climate change in Brazil. For example, the Sao Paulo Stock Exchange launched in late 2010 a new market index, the Carbon Efficient Index (ICO2), an index that encourage companies to assess, disclose and monitor their GHG emissions.

### Sector Recent Evolution and Current Situation

14. To face the challenges of climate change, the PNMC established a National Plan for Climate Change that foresees the **establishment of sector-specific plans** with two main objectives: 1) mitigation of GHG emissions in energy, forestry, agriculture and livestock production, industry, waste, transport and health. As already mentioned, the main challenge for Brazil is the reduction in emissions from land use, land use change and forestry; 2) adaptation to climate change, with special focus on populations with more vulnerability to changes in climate, especially for those in poor households.
15. The design and execution of these sector plans have to involve State and Municipalities and include the commitments, methodologies, guidelines and strategic actions to tackle climate change. The sector plans foresee help and support in R&D, education, capacity building, communication and design of economic instruments, international cooperation and legal, to implement these types of actions. In 2010, five plans were under preparation and should be finalized soon:
  1. Action Plan for the Prevention and Control of Deforestation in the Amazon
  2. Action Plan for the Prevention and Control of Deforestation in the Cerrado
  3. Sectoral Plan of Energy
  4. Sectoral Plan of Agriculture and Livestock (*Plano ABC*)
  5. Substitution Plan in the Iron and Steel Industry of charcoal from Deforestation to Forest Plantations
16. Seven sector plans are being drafted in 2011, including: 1) Transport; 2) Transformation of Durable Consumption Goods; 3) Chemical; 4) Paper and Cellulose; 5) Mining; 6) Civil Construction; and 7) Health Services.
17. The first of these sector plans to be presented was the ABC Plan (*Plano Agricultura de Baixo Carbono, ABC*) to reduce GHG emissions from agriculture and livestock activities and contribute, indirectly, to reduce emissions from deforestation. The program would support actions in recovering degraded pasture areas and integrated

production systems (agro-pasture, silvopasture, agro-forestry or agro-silvopasture systems), restoration of implementation and maintenance of commercial forest plantations for recomposition of legal reserves or permanent preservation areas (see Table 1).

*Table 1. Low Carbon Agriculture - Goals 2010-2020*

Source of Reduction of Emissions	Current Area (millions/ha)	Area in 2020 (millions/ha)	Reduction of GHG emissions by 2020 (in millions of t CO <sub>2</sub> eq)
Recovery of degraded areas	40	55	83 to 104
Increased adoption of Direct Planting Systems	25	33	16 to 20
Increased the area of Planted Forest	6	9	8 to 10
Increased adoption of agro-silvopasture systems	2	6	18 to 22
Promote the increase of Biological Nitrogen Fixation	11	16.5	16 to 20
Animal waste management, with focus on pork production			6.9

*Source: Ministério da Agricultura, Pecuária e Abastecimento, Brasil*

18. Embrapa has developed a plan with the Ministry of Agriculture to promote the implementation of Brazil GHG reduction targets in agriculture. The plan will include: 1) Dissemination of already existing technologies and know-how for enhanced agriculture and livestock production that induce sustainable use of land and GHG emissions reductions; 2) Incentives for development of new technologies and know-how; and 3) promoting its own sustainable policy and ensuring GHG footprint of its operations.
19. Additionally, during 2011-2012 a **National Plan of Adaptation** is going to be prepared, along with adaptation actions in vulnerable coastal areas as well as semi-arid areas susceptible to desertification. The National Adaptation Plan There is need for technical and financial support to develop and implement this plan, which would take account for food security and nutrition, water security, disaster and risk management, health, etc.
20. These initiatives are in addition to the **actions that Brazil has already taken related to sustainable development related to renewable energy, energy efficiency and conservation, solid waste treatment and land use management**. These actions include the National Ethanol Program (*Programa Nacional do Álcool*, Proalcool) and the Brazilian Biodiesel Program (Pro-Biodiesel), to promote the use of sugarcane ethanol and biodiesel as fuel for transport, as well as the use of sugarcane bagasse for co-generation. There have also been energy conservation programs since 1985, including the National Program of Electric Energy Conservation (Procel), the National Program on the Rationalization of the Use of Oil and Natural Gas Products (Conpet), and the National Program for Efficient Public Lighting (Reluz). In 2010 a national law to regulate solid waste treatment was adopted and modifications to the Forestry Code of Brazil are currently being negotiated in the Senate.
21. Also, Brazil has been very active participant in the **Clean Development Mechanism (CDM)** under the Kyoto Protocol, as well as voluntary mechanisms of emissions reduction. As of August 2010, Brazil had a total of 460 CDM project activities or 7% of all project activities around the world, ranking third in the world behind China and India. The majority of the project activities in Brazil came from renewable energy (51%), swine production (17%), fossil fuel switch (10%), landfill (8%), energy efficiency (6%) and waste (4%). Brazil has developed a



very active voluntary carbon market, and there are currently discussions regarding a possible national voluntary market, given that UN talks have run out of time to meet a December 2012 deadline to put in place a binding successor to the Kyoto Protocol on curbing GHG, as announced by the head of UNFCCC in June 2011.

22. Another issue that would decisively affect whether or not Brazil meets its GHG reduction targets is the new **Forest Code** which was recently approved in May 2011 by the Lower House of the Brazilian Congress. The new Code is viewed as a victory for large farmers and livestock producers, as it gives amnesty to several years of illegal logging and would relax the main law that regulates the use of land in large areas of Brazil, including the Amazon. According to some estimates the current law, which mandates farmers to preserve a share of their land, is only abided by 10 percent of Brazilian farmers, as most of them see the law as too restrictive and difficult to comply. The new law would reduce the share of land under conservation and would provide amnesty to any illegal deforestation that existed before April 2008. This is seen by environmental groups as an open door for future amnesties. This comes as deforestation in the Amazon rose by 27 percent year-on-year in the period from August 2010 through April 2011, mainly concentrated in Mato Grosso, a soybean producing state. This new figures come after a December 2010 report showed that deforestation had reached a 22-year low. These changes in the deforestation rate will frame much of the discussion in 2011 as the new Forest Code moves to the Upper Chamber of Congress.
23. Finally, Brazil is preparing for the **2014 World Cup**, named as *Copa Verde*, as well as for the 2016 Olympic Games. Brazil is trying to capitalize on this event to promote sustainable development and investments in various sectors, including transport, energy efficiency and use of renewable sources of energy, sanitation, etc. These investments will focus specially in the cities related to the World Cup, with 9 of them amongst the 10 largest in the country with a total of 36 million inhabitants.

### National and International Funds for Project Financing

24. To implement the PNMC, the government of Brazil created the **Climate Fund (*Fundo Clima*)**. This Fund is replenished in its majority (60%) by royalties from Petrobras to support financing activities under the sectoral plans. The Fund has resources allocated annually for adaptation in form of grants and for mitigation in form of concessional lending. For 2011, there are R\$238 million reais, from which the National Economic and Social Development Bank (BNDES) will provide R\$204 million in credit lines for projects in the public and private sector in mitigation. There are also R\$34 million managed directly by the Ministry of Environment for adaptation, funding non-reimbursable public initiatives through grants. That is, 85 % of all funding will be directed towards mitigation and 15% towards adaptation.
25. BNDES will finance the actions established in the sectoral plans, mitigation and adaptation actions in States and Municipalities and will finance technological innovation for the development of a low-carbon economy. To

support the ABC Plan for Agriculture, BNDES launched in 2010 a 1 billion reais (US\$ 588 million) fund to finance projects to reduce GHG emissions associated with agriculture.

26. The Ministry of Environment as of February 2011 was working to define the priority areas for the use of these resources available in order to present to the Board of the Fund on March 15th, 2011. Some initial areas that have been identified were: 1) Deforestation and forest degradation; 2) Urban Mobility; 3) Sustainable infrastructure and sustainable building; 4) Solar Energy (generation at local level); 5) Semi-arid, Caatinga, Pampa, and other ecosystems that are vulnerable to disasters; and 6) Adaptation. Within adaptation, there has been a prioritization of strategic actions related to areas identified as highly vulnerable such as: (i) elaboration of a national adaptation strategy; (ii) areas that are susceptible to desertification, including fight against droughts and sustainable use of hydrological resources; (iii) costal zones; and (iv) early warning systems.
27. The **Amazon Fund (*Fundo Amazonia*)** is a mechanism outside the Federal government, managed by BNDES and that receives donations for non-reimbursable investments for prevent and reduce deforestation, promote conservation and sustainable use of forests areas in the Amazon and investment in new monitoring technologies in all Brazilian biomes. It has pledges from Norway (USD 1 billion) and Germany (USD 28 million). It is worth noting that 20% of this Fund has a mandate to use up to 20% of the funds for supporting deforestation monitoring in countries outside of Brazil.
28. Other **public financial institutions** that provide financing for projects in sectors that could potentially reduce GHG emissions include Caixa Economica Federal (CEF), Banco do Brasil, and the Constitutional Financing Funds established to promote regional development in the North, Northeast and Center-West, the Fundo Constitucional do Norte (FNO), Fundo Constitucional do Nordeste (FNE), and the Fundo Constitucional do Centro-Oeste (FCO), managed respectively by the Banco de Amazonia, Banco do Nordeste, and Banco do Brasil.
29. There are other **international funds** that can be accessed by Brazil. These include the Forestry Investment Fund (FIP) of the Climate Investment Funds (CIF), the Global Environmental Facility (GEF), etc. While Brazil was considered up front as high priority for finance from the CIF, due to political reasons (UNFCCC negotiations on finance in 2009), Brazil hesitated to access to these funds in the past. With the results of UNFCCC Copenhagen negotiations the Government of Brazil has decided to request participation in the FIP. As of February 2011, the government of Brazil has also advanced in identifying its needs and plans for using the FIP resources. The government considers these resources as key to support a forestry inventory for the Cerrado region, support to local capacity to undertake monitoring, reporting and verification (MRV) of mitigation actions and potentially for promoting technologies and good practices for improving efficient agricultural practices and reducing agricultural expansion. As of February 2011, it seems that most of those resources would be allocated at the federal level.

## Sector Problems and Priorities

30. **The implementation of the National Plan of Climate Change (PNMC)** and its sectoral plans, require a substantial financial and technological support. At the same time, it will require a large adaptation capacity of the Brazilian national economy to be able to achieve the established goals under the PNMC, not only at the thematic area (sectoral), but also at the political level (Federal, State and Municipal).
31. **The National Plan of Adaptation** requires special attention in its design and implementation, as there are challenges associated with this. The Government of Brazil requires technical and financial support, especially at the State and Municipal level, for project design and implementation. As noted before, vulnerable areas in coastal zones and areas susceptible to desertification will receive special attention under the plan.
32. There are challenges regarding the **formulation of sectoral plans**, given the uncertainty on how to achieve the goals under the PNMC. There is a need for technical support in developing these sectoral plans, and to analyze their implications at the Federal, State and Municipal level. Additionally, there is a problem in project identification for use of local climate funding. BNDES has identified a lack of qualified projects that can apply for those funds allocated under the national Climate Fund.
33. At the same time, there will be **costs and financial need relating to specific plans**. The Ministry of Finance is currently assessing those needs. Thus, there is a need for capacity building for budgeting and planning climate finance, including economic analysis of the implications of climate change, inclusion of mitigation and adaptation in Federal, State and Municipal budgets and planning, distance learning and promotion of sectoral plans for carbon markets and programs at the State and Municipal level. One of the main problems is that local governments often have low institutional capacity, which combined with the lack of trained technical personnel to develop and manage projects, create an environment in which it may be difficult to promote the PNMC.
34. There is also a need for **Nationally Appropriate Mitigation Action (NAMA) programs**, including the design and implementation of pilot programs for systematic data collection to monitor the execution of the PNMC, and to promote programmatic carbon market, especially for sustainable transport, modal shift and freight transport, sustainable logistics, waste management and renewable energy at the sub-regional level.
35. The **creation, development and application of market mechanisms** (fiscal incentives, carbon markets, etc) that could promote the adoption of new technologies by both industry and consumers that could reduce energy, water and materials consumption remains a challenge. Correct design of such policies remains specific to each industry and region, and there is no single solution for this.
36. **Participation of regional and local financial institutions** in offering credit lines for investment in low carbon projects is also a challenge. There is the need to develop financial instruments to promote private investment in reducing GHG emissions and promoting carbon markets. Financial institutions, both public (national or regional development banks) and private (commercial banks), usually find themselves with a lack of capacity to

identify and finance good renewable energy and energy efficiency projects, which hinders the development of such sectors.

37. One of the **challenges to reduce deforestation** is to generate income and employment in an integral manner. *Casa Civil* is interested in the development of models for job creation in Amazon states that could promote economic sectors that do not drive deforestation in that region. As previously discussed, the challenge of the new Forestry Code is to balance the needs of farmers and livestock producers with forest conservation. The need for regularization of land holdings is in the interest of both farmers and environmentalists. There is a need for the creation of market mechanisms that support environmental conservation, the recovery of degraded forest areas and an efficient use of the land.
38. Regarding **regional (South-South) cooperation in Latin America and the Caribbean**, Brazil also seeks how to better cooperate with countries in the region, regarding specific issues, such as the access by neighboring countries to the Amazon Fund (20% of this Fund is allocated to countries in the Amazon basin other than Brazil), as well as the mapping of climate change vulnerability in the region. As part of this South-South cooperation, capacity building and technology transfer in areas such as in the development of biofuels and other renewable energy sources should be included in such agenda.

### Bank Actions related to Climate Change

39. IDB has been supporting activities to mitigate and adapt to climate change in Brazil in a range of sectors, such as sustainable transport, land use management and sustainable ecosystems, renewable energy and water. The support provided by IDB on climate change has mainly taken place through: integration of adaptation and/or mitigation considerations in lending operations, technical cooperation support through its dedicated support funds (such as the Sustainable Energy and Climate Change Initiative Funds - SECCI), support to IDB clients to access and blend international climate finance with IDB operations (including from the Global Environment Facility and the Climate Investment Fund), and support to development of strategic dialogues and partnerships with key stakeholders in private and public sector. In undertaking this work IDB identifies its comparative advantage in having a unique position of supporting both private and public sectors and working closely with state level in Brazil and hence being able to promote private public partnerships and better coordination and implementation of national priorities at local level.
40. **Integration of climate change mitigation and adaptation in IDB operations:** Many of the sectoral lending operations from IDB have traditionally already integrated climate change adaptation and mitigation considerations in their design given their focus. This has for instance been the case of lending operations on for enhancing sustainable land use and forestry management as in the case of the State of Acre (BR-L1289) and for Mata Atlantica in Sao Paulo (BR-L1241), for supporting sustainable infrastructure for tourism (BR-L1195, BR-L1204, BR-L210, BR-L212), for investing in public transport systems that provide for modal shifts and GHG

emission reductions at city level such as support for the construction of metro lines in Sao Paulo and for Bus rapid Transit Systems (BR-L1162, BR-L1227, BR-1085) and for supporting the development of renewable energy technologies by private sector (BR-G1001, BR-L1107, B-L1108, BR-L1111). While these initiatives provided for considerable positive impacts in terms of mitigation of GHG emissions and higher resilience to climate change impacts, they were not executed under a coordinated and coherent framework. Under the new mandate from the GCI 9, IDB will be developing a more comprehensive and coordinated structure to classify its operations with regard to adaptation and mitigation benefits and to provide incentives for operations to consider cost and benefits of integrating climate change concerns in their design.

41. **Technical cooperation support:** During the last four years IDB has supported about 30 projects (see table in annex) that provided grants and technical capacity to IDB private and public sectors in different areas such as promotion of sustainability systems for production of biofuels, promotion of renewable energy, support for access to carbon markets, support to urban mobility programmes, support to assessment of GHG emission reductions and innovative approaches to support to finance for mitigation actions related to land use and forestry management, vulnerability assessment and development of adaptation strategies for coastal ecosystems, support for capacity development planning and finance ministries at state level to integrate climate change concerns in budgetary and fiscal planning, and support to the information and knowledge sharing on climate change mitigation and GHG inventories for private sector corporations (through support to ABNT, SEBRAI and important private sector think tanks).
42. Many of the technical cooperation under way were supported through the Sustainable Energy and Climate Change Initiative (SECCI), approved by the IDB Board of Executive Directors in March 2007 (GN-2435-6), which focuses in supporting sustainable energy and climate change mitigation and adaptation activities. While the technical cooperation of IDB supported different sectors, given their limited size and role, IDB is undertaking an effort to support the government of Brazil to identify a more coherent and strategic approach to use these technical cooperation funds – particularly within the context of development of sectorial climate change action plans and their further implementation. Using its experience with other technical cooperation and lending frameworks IDB sees its comparative advantage in supporting the federal government with local / state implementation of national plans. The effort also is towards having a more balanced use of such funds to sectors and areas that have gained more importance in the national climate change policy or require larger amounts of training, such as in the cases of reduced deforestation efforts, sustainable transport, and adaptation to climate change impacts.
43. IDB has also been supporting projects in Brazil through **regional projects**. These projects provide for opportunities for knowledge sharing and for services that can support IDB lending in integrating climate change components (i.e. assessment of emission reduction potentials, assessment of potential to promote energy efficiency or biofuels, assessment of climate change vulnerability, support to financing such as through

the carbon markets and support to development banks to identify portfolios of mitigation activities and develop innovative financial instruments to promote projects on energy efficiency and carbon finance).

44. **Support to access to international climate finance:** Effective IDB support to the development of LAC's climate change strategy and operations requires active participation in the definition of the international climate regime. Doing so allows the IDB to identify opportunities for the region as they arise and to assist borrowing member countries in their transition towards a sustainable growth path. The IDB's main activities along these lines are the involvement in the design of the Green Climate Fund, the joint work with MDBs on climate finance, policy, advisory and capacity building, and the implementation of the Climate Investment Funds.
45. IDB is an executing agency of the Climate Investment Funds, the Global Environment Facility (GEF) and the Adaptation Fund. It also catalyzes funds from a number of bilateral programmes aimed at supporting activities addressing climate change.
46. IDB has been increasing its portfolio of projects financing climate change mitigation under the GEF in the LAC region. The GEF funds are seen as important seed funds to catalyze larger investments in programmes for reduced deforestation, sustainable transport and sustainable energy. IDB has been increasingly supporting GEF activities in the LAC region. In Brazil IDB was able to develop projects with large mitigation and mitigation benefits in the area of sustainable land use.
47. IDB is also supporting the implementation of the **Climate Investment Funds**. IDB has played a key role in channeling the Clean Technology Fund of the Climate Investment and the Strategic Climate Fund for LAC countries via its three programs: Scaling-up Renewable Energy in Low-Income Countries (SREP), the Forest Investment Program (FIP) and the Pilot Program for Climate Resilience (PPCR). The CIF's objective is to achieve transformational outcomes and to demonstrate what can be achieved jointly by the multilateral development banks (MDBs) through programmatic approaches to scale-up resource availability to a set of pilot countries for climate resilient and low carbon development. Since its inception in 2008, the IDB has participated in the definition of CIF programs and currently dedicates considerable staff time among its public and private sector lending arms to mobilize and leverage such resources. Brazil has requested support from the FIP and is currently assessing areas of potential support and priorities.
48. **Dialogues and partnerships:** In addition to the support to government and private clients through technical cooperation and lending, IDB has been partnering and supporting some key stakeholders in Brazil (such as private sector associations, local development banks, state governments, stock markets and commercial banks) in preparing studies and undertaking dialogues (national and regional) on topics such as sustainable biofuels, carbon finance, adaptation, renewable energy and energy efficiency.



## Strategic Framework

49. Support for the climate change adaptation and mitigation agenda and for sustainable and renewable energy in the region have recently become an even higher priority for the IDB. The **Ninth General Capital Increase (GCI-9)** establishes that the IDB will promote sustainable growth in LAC which includes pursuing global environmental sustainability and dealing with climate change while ensuring that energy requirements for development are met. The GCI-9's results framework includes a specific lending target for climate change, renewable energy and environmental sustainability of 25% for the period 2012-2015. Such mandate requires the IDB to improve its capacity to assist the region in its transition to a green economy and in the development of institutional and regulatory frameworks to promote investments that address the climate change priorities of the region. Mainstreaming climate change in the IDB operations is of high priority for the IDB, as it has been highlighted in the Annual Meeting of Board of Governors of IDB in Cancun, Mexico (21 March 2010).
50. In response to the mandate from GCI-9 IDB has also developed a **climate change strategy** that was adopted by the IDB Board on 18 March 2011. The strategy provides for strategic priorities and 5 main lines of work to support adaptation and mitigation to climate change which includes: (i) strengthen the Bank's knowledge base; (ii) strengthen institutions and private and public sector capacity; (iii) develop instruments to mainstream climate change mitigation and increase resilience of Bank-funded activities; (iv) identify and develop lending and technical assistance for climate action in key sectors; and, (v) scale up investments, address financial gaps and leverage private sector investments (see: <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=35149039>).
51. As explained in section III, while the IDB has been promoting a variety of mitigation and adaptation activities in the Brazil during the last years, these activities were mainly developed in response to requests by clients on an ad-hoc basis. The IDB recapitalization and climate change strategy provide an opportunity for the IDB to scale up its climate change support activities in Brazil and to promote more coherent and comprehensive approach to support Brazil.
52. Given that Brazil has developed a **national policy on climate change and a number of sectorial action plans**, these sectorial action plans should per se constitute frameworks for prioritizing IDB activities on climate change in the next couple of years. It is also important to consider in the support strategy of climate change activities in Brazil, how IDB operations can better blend and complement instruments and initiatives being developed by the Government of Brazil, such as Fundo Amazonia and Fundo Clima.

## Strategic Objectives

53. Based in the experience of IDB in Brazil in the last years, in the priorities set by the Brazilian climate change national policy and by the IDB GCI 9 and Climate Change Strategy, the IDB should support a pathway towards sustainable development that fully incorporates climate change considerations. The following strategic

objectives are suggested for the support of activities addressing climate change in Brazil in the following years, and are aimed towards a triple win situation: increased productivity; increased resilience; and reduced GHG emissions:

- I. **Support the Brazilian government**, especially **at the sub-national level** (State and Municipal), in the implementation of the National Plan of Climate Change (PNMC) and its sectoral plans.
- II. **Increase and strengthen the knowledge base on climate change**, including the support the *piloting of new programs and mechanisms* being developed under the Climate Change Convention, such as Nationally Appropriate Mitigation Action (NAMA) programs and National Adaptation Programs (NAPs) and the creation of market mechanisms and financial incentives that could promote the adoption of new technologies, change consumer behavior in order to achieve a low carbon economy in Brazil. Also, support *Brazilian (South-South) cooperation* in Latin America and the Caribbean in the area of climate change mitigation and adaptation.
- III. Enhance the **participation of regional and local financial institutions** in offering credit lines for investment in low carbon projects.

## Necessary Actions to achieve Strategic Objectives

54. To achieve the strategic objectives outlined in section VII, the actions necessary to achieve the strategic objective will include:

- I. **Support efforts on climate change at the national and sub-national level:**
  - a. Develop programmes to assist the federal government to promote and train key stakeholders in the development and implementation of of the National Plan of Climate Change (PNMC) and its sectoral plans, in particular at the State and Municipal levels, including for:
    - Support the development of tools and outreach for State and Municipalities to identify economic implications and financing and market mechanisms options to promote sectoral plans;
    - Technical support for State and Municipalities for developing appropriate regulatory, planning and management tools and systems to apply sectorial plans to local and sectoral needs;
    - Pilot and provide technical backstopping in the development of high quality potential mitigation and adaptation projects that could be promoted through national and international climate or carbon finance, especially for reduced deforestation, sustainable transport, waste management, renewable energy and disaster risk management.



- b. Support key sectors in the implementation of data collection systems to monitor the execution of the PNMC.
- c. Support local level initiatives (such as medium sized cities) on integrated adaptation and mitigation programs, particularly within the Sustainable Cities initiative at IDB.

## II. Strengthening of Knowledge Base through new programs, mechanisms and regional cooperation

- To increase knowledge base of climate change in Brazil and the region, the IDB would support the country in two main areas: 1) Support the piloting of new programs and mechanisms being developed under the Climate Change Convention, and 2) Regional (South-South) cooperation in Latin America

### *1. Support the piloting of new programs and mechanisms being developed under the Climate Change Convention:*

- a. Provide technical and financial support for the design, implementation and monitoring of Nationally Appropriate Mitigation Action (NAMA) programs and National Adaptation Plans (NAPs), including support to:
  - Integrating mitigation estimations in sectoral / decision making planning, including identification of potential GHG emission reductions and financial needs
  - Piloting methodological approaches to monitor, verify, and reports results;
  - Supporting the blending and access to climate change finance.
- b. Support the creation of market mechanisms and financial incentives that could promote the adoption of new technologies, change consumer behavior in order to achieve a low carbon economy in Brazil.

### *2. Regional (South-South) cooperation in Latin America:* As a regional Bank, the IDB could support Brazil in collaboration through its initiatives, funds and dialogues with the Latin American and Caribbean region. Some important areas of support to collaboration could include:

- a. Capacity and practices for monitoring reduced deforestation
- b. Capacity and practices to manage and address risks relating to climate change impacts, including disasters, water management, forestry and agriculture



- c. Experiences in developing new approaches and mechanisms under the Climate Change Convention, such as NAMAs and NAPs, particularly in sectors such as sustainable transport and waste management.
- d. Experiences in developing financial and market mechanisms for supporting low carbon technologies and reduced deforestation; and
- e. Technology diffusion and dissemination for renewable technology and agriculture (i.e. biofuels)

### III. Participation of regional and local financial institutions:

- a. Support the assessment of local financial institutions portfolios of existing markets to identify opportunities of financing climate change mitigation and adaptation activities
- b. Provide technical support for capacity development to regional and local financial institutions to integrate climate change concerns in their activities and identify specific roles and programs to promote
- c. Support the development and piloting of specific financial instruments that could facilitate lending by local banks and financial institutions in mitigation and adaptation activities

The Bank will use innovative approaches and combinations of mechanisms to strengthen the clients' ability to plan, execute, monitor and evaluate their CC operations. These incentives will include the development of financial instruments to be managed by local financial institutions, risk reducing instruments and mechanism, technical cooperations, etc. It is expected that the mainstreaming of climate change mitigation and adaptation in IDB operations would increase the numbers of operations (loans, investment grants, technical cooperations, etc.) that are directly related to climate change or have components of climate change incorporate into the project design. As such, the IDB would better match the needs of the Government of Brazil as outlined in the PNMC, including increased support to GHG emissions reductions from reduced deforestation, sustainable agriculture, sustainable transport, sustainable energy, waste management and support to enhanced resilience and adaptation programmes relating climate change impacts in infrastructure and ecosystems.

### Expected Results from Bank Intervention

55. The expected results for each of the strategic objectives are:

- I. **Support efforts on climate change at the national and sub-national level:** By providing support in the implementation of the PNMC, it is expected that States and Municipalities and at least one key



economic sector will strengthen their capacity to both, implement projects and develop sectoral strategies under the PNMC. It is expected that:

- a. State and Municipalities have increased their institutional capacity to identify economic implications and financing and market mechanisms options to promote sectoral plans;
- b. State and Municipalities have the capacity to develop appropriate regulatory, planning and management tools and systems to apply sectoral plans to local and sectoral needs;
- c. State and Municipalities have the capacity to implement mitigation and adaptation pilot projects that could attract additional funding at the national and international level.
- d. At least one economic sector ministry is supported in identifying specific actions and incentive systems for promoting systems for the National Plan of Climate Change.

II. **Strengthening of Knowledge Base through new programs, mechanisms and regional cooperation:** It is expected that as a result of IDB's intervention, there will be:

- a. Increased capacity for the implementation of sectoral plans that incorporate climate change into the decision making process through the adoption of NAMAs and NAPs.
- b. Adoption of new and innovative technologies through the design and implementation of market mechanisms and financial incentives.
- c. Increased capacity on dealing with climate change (both adaptation and mitigation) issues in cities.
- d. As part of increased cooperation of Brazil with countries in the region, it is expected that there would be strengthening of knowledge sharing of good practices in monitoring and reducing deforestation, sustainable agricultural practices, sustainable transport, sustainable and renewable energy, including biofuels, water management and disaster risk management.

III. **Participation of regional and local financial institutions:** There will be increased institutional capacity of financial institutions to offer credit lines for investment in low carbon projects. It is expected that for those financial institutions where the Bank offers assistance, there will be an increase in the portfolio for renewable energies and energy efficiency.

## Indicators

56. The following indicators have been identified to measure the outcomes from the implementation of the strategy:

STRATEGIC OBJECTIVES	ACTIONS	RESULTS	INDICATORS	BASELINE (2006-2011)	GOALS (2015)
<b>I. Support the Brazilian government (specially at the Sub- National level) in the implementation of the National Plan of Climate Change (PNMC) and its sector plans</b>	<ul style="list-style-type: none"> <li>- Develop programs to assist the federal government to promote and train key stakeholders in the development and implementation of climate change sector plans, in particular at the State and Municipal levels</li> <li>- Support key sectors in the implementation of data collection systems to monitor the execution of the PNMC</li> <li>- Support the identification, classification and assessment of IDB operations that may have opportunities to promote mitigation and adaptation activities.</li> <li>- Support the implementation of mitigation and adaptation activities under IDB supported operations through provision of technical cooperation and support in the identification and blending of climate finance with IDB support operations.</li> </ul>	<p>State and Municipalities have increased:</p> <ul style="list-style-type: none"> <li>- Institutional capacity to identify economic implications and financing and market mechanisms options to promote sector plans.</li> <li>- Capacity to develop appropriate regulatory, planning and management tools and systems to apply sector plans to local and sector needs.</li> <li>- Capacity to implement mitigation and adaptation pilot projects that could attract additional funding at the national and international level.</li> <li>- At least one economic sector ministry is supported in identifying specific actions and incentive systems for the implementation of National Plan of Climate Change.</li> <li>- Increase the numbers of operations (loans, investment grants, technical cooperations, etc.) that are directly related to climate change or have components of climate change incorporate into the project design.</li> <li>- Increased capacity on dealing with climate change (both adaptation and mitigation) issues in cities</li> </ul>	Number of lending operations including climate change mitigation / adaptation activities	22	28
			Number of national frameworks for climate change mitigation supported*	0	1
			Number of studies of economic implications and financing mechanisms of addressing climate change for States and Municipalities	0	2
			Percent of staff at institutions at States and Municipalities capacitated about climate change implications and the PNMC that perceive their knowledge has increased	0%	30%
			Number of adaptation/mitigation projects identified and designed at State and/or Municipal level	0	5
			Number of sector implementation studies for the PNMC	0	1
			Number of cities with appropriate adaptation and mitigation plans	0	1



<b>II. Strengthening of Knowledge Base through new programs, mechanisms and regional cooperation</b>	Support the piloting of new programs and mechanisms being developed under the Climate Change Convention, such as Nationally Appropriate Mitigation Action (NAMA) programs and National Adaptation Programs (NAPs), including:	- Increased capacity for the implementation of sector plans that incorporate climate change into the decision making process through the adoption of NAMAs and NAPs.	Number of climate change pilot projects in agriculture, energy, health, water and sanitation, transport and housing	31	39
	- Provide technical and financial support for the design, implementation and monitoring of Nationally Appropriate Mitigation Action (NAMA) programs and National Adaptation Plans (NAPs).	- Adoption of new and innovative technologies through the design and implementation of market mechanisms and financial incentives.	Number of Nationally Appropriate Mitigation Action programs (NAMA) for a sector implemented	0	1
	- Support the creation of market mechanisms and financial incentives that could promote the adoption of new technologies, change consumer behavior in order to achieve a low carbon economy in Brazil.	- Strengthening of knowledge sharing of good practices in monitoring and reducing deforestation, sustainable agricultural practices, sustainable transport, sustainable and renewable energy, including biofuels, water management and disaster risk management.	Number of National Adaptation Plans (NAP) for a sector implemented	0	1
	- Support local level initiatives (such as medium sized cities) on integrated adaptation and mitigation programs, particularly within the Sustainable Cities initiative at IDB		Number of forum for policy and technical dialogue for a sector organized/established	0	1
	- Support and promote Brazilian (South-South) initiatives of cooperation in Latin America and the Caribbean in the area of climate change mitigation and adaptation		Number of Knowledge Exchange Platforms for a sector and/or technology established	0	1
<b>III. Enhance the participation of regional and local financial institutions in offering credit lines for investment in low carbon projects.</b>	- Support the assessment of local financial institutions portfolios of existing markets to identify opportunities of financing climate change mitigation and adaptation activities  - Provide technical support for capacity development to regional and local financial institutions to integrate	Increased institutional capacity of financial institutions to offer credit lines for investment in low carbon projects. It is expected that for those financial institutions where the Bank offers assistance, there will be an increase in the portfolio for renewable energies and energy efficiency.	Number of Financial Institutions capacitated on low carbon projects	0	2



<p>climate change concerns in their activities and identify specific roles and programs to promote</p>	<p>Number of portfolios of mitigation projects identified</p>	<p>1</p>	<p>2</p>
<p>- Support the development and piloting of specific financial instruments that could facilitate lending by local banks and financial institutions in mitigation and adaptation activities</p>			

*Note: Sectoral indicators for sustainable transport, agriculture, forestry and energy should included in those sector notes.*





## Risks

57. Risks that could undermine some of the results of the strategy could include:

- Coordination between federal and local government agencies and stakeholders at the State and Municipal level with regard to the PNMC
- Limited institutional capacity in some of the areas related to climate change may affect the implementation of the strategy.
- Risk associated with changes in government authorities (mayor elections in 2012)
- Lack of coordination at different thematic areas (sectors) and different levels (Federal, State, Municipal).
- Time constraints with specific initiatives (World Cup 2014, Olympics 2016, etc).
- Changes in regulatory framework (i.e. Forestry Code) that may hinder some initiatives.

## References

Intergovernmental Panel on Climate Change (IPCC), 2007. Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability. Contribution to the Working Group II for the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva

Ministry of Science and Technology. 2010. Second National Communication of Brazil to the United Nations Framework Convention on Climate Change. Brasilia.

Comitê Interministerial sobre Mudança do Clima. 2008. Plano Nacional sobre Mudança do Clima. Decreto No. 6.263, Novembro 2007. Brasília.

Ministério da Agricultura. 2011. Programa ABC - Agricultura de Baixo Carbono. <http://www.agricultura.gov.br/portal/page/portal/Internet-MAPA/pagina-inicial/desenvolvimento-sustentavel/programa-abc>

The World Bank. 2010. Brazil Low-carbon Country Case Study. Brasilia.

Inter-American Development Bank. 2011. Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy. Washington DC.

Oxford Analytica, 2011. Brazil: Flooding highlights climate, regulatory risks. March 8, 2011.

Climate Change Bill (Law # 12.798)

UNFCCC. 2011. Cancun Agreements. <http://cancun.unfccc.int/>

Vergara, W. and Scholz, S.M. (2010). Assessment of the risk of Amazon dieback. World Bank Studies. World Bank, Washington, D.C.



## Annex 1: Climate Change Related Activities in Brazil

*Table 1: Projects in Brazil led by ECC*

Themes	OPUS number	Name	Summary	INE/ECC	Role / support from other teams	Status	Sources of finance
<b>Adaptation</b>	BR-T1161	Support the Government of Ceara in the Preparation of the International Conference on Climate, Sustainability and Development in Semi-arid Regions	Support of organization of the international event and preparation of papers and presentations on land degradation and on vulnerability to climate change in arid regions.	Maria Netto (team leader) and Alfred Grunwaldt (member)	Joseph Milewski (RND/CBR) (member)	Project approved, executed and disbursement underway	SECCI
<b>Adaptation</b>	BR-T1189	Support to the assessment of vulnerability and adaptation in costal and arid zones (collaboration with the Ministry of Science and Technology)	Support enhancement of local capacity in governments of Nordeste to undertaking modeling and the assessment of vulnerability and adaptation of coastal zones and arid regions (executed by University of Natal). The results of the work should assist the Ministry of Science and Technology in the elaboration of the Brazilian National Communication on Climate Change.	Alfred Grunwaldt (INE/ECC) (co team leader) and Ines Ferreira (member)	Vanderleia Radaelli (SCT/CBR) – team leader	Project approved	SECCI
<b>Capacity Building</b>	BR-T1183	Strengthening Climate Change Budget Planning and Fiscal Management in Brazil	Support in capacitating representatives of finance and planning secretariats from states and municipalities to integrate CC in fiscal policies and budget planning.	Maria Netto (team leader) and Carlos Ludena (member)	Maria Cristina Mac Dowell Dourado de Azevedo (CSC/CBR) (co-team leader)	Project Approved	Chinese Fund
<b>Biofuels</b>	BR-M1103	Development of food and biofuels chains from sunflower production in Mato Grande	This joint project with MIF seeks to produce sunflower oil biodiesel while utilizing side products as inputs for other food-generating processes including for animal consumption and will support 11 agricultural producers' cooperatives and family agriculture in an environmentally sustainable manner. MIF will co-finance technical assistance and support to cooperatives; provide technical management; and financial and business support to the Project. The revenue generated will help to create a contingency fund to mitigate the impacts of any crisis and another fund to secure the repayment of loans.	Co-team leader: Gloria Visconti (INE/ECC)	Lorena Mejicanos	The project is the in ESS.	FOMIN  ECC is contributing \$101,000 in co-financing for this project from the Biofuels Retainer (RG-T1154)



*Table 2: Other projects under SECCI and ECC involvement*

Themes	OPUS number	Name	Summary	Team Leader	Role of ECC/ Focal Points	Status	Sources of finance
<b>Biofuels</b>	BR-T1086	Feasibility Studies for Biofuels Production	Studies for govt of Brazil of potential promotion of biofuels in Haiti and Central America	Arnaldo Vieira de Carvalho (INE/ENE)	None.	Approved	SECCI
<b>Energy and mitigation</b>	BR-T1096	TECSIS technology and advanced systems	Promotion of wind technology.	Edson Mori (CFI/SCF)	Hilen Meirovich (member).	On pipeline	SECCI
<b>Carbon Finance</b>	BR-T1098	CDM Methodology for Carbon Equivalent Reduction in the Sao Paulo Metro	Development of a methodology to participate in the Clean Development Mechanism and promoting emissions reductions credits (CERs).	Dalve Alexandre Soria Alves (INE/TSP)	Maria Netto and Francisco Arango (members)– reviewing materials / technical backstopping	Approved	SECCI
<b>Carbon Finance</b>	BR-T1107	Methodology for Modal Shift Towards Metro and Light Rail	Development of a methodology to participate in the Clean Development Mechanism and promoting emissions reductions credits (CERs).	Dalve Alexandre Soria Alves (INE/TSP)	Maria Netto and Francisco Arango (members) – reviewing materials / technical backstopping	Approved	SECCI
<b>Mitigation and energy and carbon finance</b>	BR-T1103	Identification of Projects for Sustainable Development in Minas Gerais	Support to the development bank of Minas Gerais to assess potential mitigation options and develop financial instruments	Arnaldo Vieira de Carvalho (INE/ENE)	None.	Approved	SECCI
<b>Mitigation and transport</b>	BR-T1109	Rio de Janeiro: Support to Non-motorized Transport State Program	Objective to reduce traffic and costs and emissions through promotion of non motorized transport.	Paulo Eduardo Carvalho (INE/TSP)	None.	Approved	SECCI
<b>Energy Efficiency</b>	BR-T1140	Energy Efficiency in Minas Gerais	Diagnostics and planning for promotion of energy efficiency.	Arnaldo Vieira de Carvalho (INE/ENE)	None.	Approved	SECCI
<b>Energy efficiency</b>	BR-T1143	Energy Efficiency in Sao Paulo	Diagnostics and planning for promotion of energy efficiency.	Arnaldo Vieira de Carvalho (INE/ENE)	None.	Approved	SECCI
<b>Biofuels</b>	BR-T1149	Requalification of sugarcane cutters		Arnaldo Vieira de Carvalho (INE/ENE)	Limited participation.	Approved	SECCI
<b>Mitigation and Transport</b>	BR-T1167	Support Urban Sustainable Mobility Plan of the city of Rio de Janeiro	Support the preparation of a mobility plan for the city of Rio de Janeiro, including the consideration of potential GHG emission reductions and use of financial resources for climate change mitigation.	Vera Vicentini (INE/TSP)	Maria Netto and Francisco Arango (members) Support in developing a methodology for projecting and accounting for GHG emission reductions.	Approved	SECCI
<b>Biofuels</b>	BR-T1114	Biobahia Bio-Oil Project	Evaluate the feasibility of applying sunflower and jatropha curcas for the production of crude vegetable oil (bio-oil). IDB is financing a pilot audit	Sergio Rivera Zebaios (CFI/SPE)	Gloria Visconti (member)	Approved	SECCI



of this project using certification Principles and Criteria that have been developed by the Roundtable on Sustainable Biofuels (RSB).



*Table 3 - Projects under other funds in which ECC is involved*

Themes	OPUS number	Name	Summary	Team Leader	Role of ECC/ Focal Points	Status	Sources of finance
<b>Biofuels</b>	BR-L1271	Pelletization Project	<p>In order explore the economic potential of pelletization technology, the IDB has commissioned a study to evaluate the market potential for Brazilian bagasse pelletization in general and, more specifically, under BPP's business model.</p> <p>The Program includes: (i) Analysis of the bagasse supply market in Brazil; (ii) Analysis of potential bagasse based pellet market in Brazil;; (iv) Feasibility of Brazilian Pellets (BPP) business model, paying specific attention to the cost of logistics for the bagasse supply and end product delivery to the EU and domestic users; (v) Specification of market and business related assumptions to be included in the future financial model of BPP's project and (vi) Quantification of economic benefits possible from BPP's project in particular, and from the potential bagasse pelletization in general.</p>	SCF Ivan Nunez (lead)	This project is financed using the Biofuels retainer for an amount of \$203,425.00	The project is in the implementation phase.	Loan
<b>Biofuels</b>	RG-K1147	European Union and United States of America Biofuels Mandates: Impacts on World Markets	The purpose of the study, conducted by the International Food Policy Research Institute (IFPRI), the Brazilian Institute for International Trade Negotiations (ICONE), ECC/INE, is to analyze the potential impacts of the EU and US biofuels mandates on world biofuels markets. It will also analyze the impacts of limited consumption of Brazilian ethanol on the US and EU markets, including GHG emission reduction commitments and biofuels consumption targets.	Gloria Visconti (INE/ECC) and Carlos Ludena (member)	The results of the study were presented in the conference: "11º Encontro Internacional de Energia," in São Paulo on August 10, 2010.	Approved	KNL KCP



*Table 4 – Projects under preparation*

Themes	Name	Summary	Status
<b>Biofuels</b>	Brazilian Biokerosene Platform	Curcas Diesel Brasil Ltda. (CDB) has proposed a project to develop an integrated collaborative approach to address the implementation of the full sustainable biokerosene value chain. The project seeks to bring together key players to foster research and development, best agronomic practices, production capacity maximization, inbound and outbound logistic optimization, with the main goal of reaching economies of scale for cost reduction in every step of the value chain. The project proposes a research and development component along with a Jatropha placement trial in order to assess economic, environmental and social sustainability of Jatropha production.	This project is currently in the proposal phase for IDB evaluation.
<b>Sustainable energy</b>	Methane Gas Capture	This study shall analyze the energy production potential for energy production for self-supply and/or commercialization on a distributed scheme directly in the farms or under a centralized structure through swine manure collection centers. Geographic location of the characterized farms, energy potential and market development schemes within the current policy and regulatory framework for environment and energy operations in the private agriculture sectors will be part of the study. Carbon finance schemes will be analyzed too. Expected long-term target goal is to address 5 million pigs in large farms (out of 20 million hog farms market) to install bio-digesters, with the estimated emissions reduction of 3 million tons CO <sub>2</sub> eq/year.	This project is currently in the proposal phase for IDB evaluation.  The project developers, Vale Soluções em Energia – VSE (“VSE”), have requested \$600,000 with a co-financing of 20%. The Carbon Finance Retainer will be used.



*Table 5 – MIF – Projects under execution and pipeline<sup>2</sup>*

OPUS Number	Name	Year of Approval	Amount (USD)	Description
BR-M1040	Support for Environmentally Sustainable Integrated Production	2006	1,100,000	The general objective is to contribute to the socioeconomic development of rural areas in the southern part of the state of Bahia. The specific purpose is to consolidate a replicable model of integrated production for small-scale producers in environmental protection areas, based on sustainable natural resource management.
BR-M1057	Socioeconomic Integration of Recycling Collectors	2008	2,487,500	The general objective of the project is to foster the economic inclusion of marginal segments of the population in five communities in Brazil. The specific objective is to improve the income generating capacity of recycling collectors and their families through actions aimed at social integration, professionalization, and strengthening of their organizations, as well as their integration into the value chain.
BR-M1074	Tourism and Environmental Sustainability in San Francisco River-AL&SE	2009	1,000,000	Support the development of sustainable tourism to promote socio-economic development in low income population centers in the river San Francisco in the States of Sergipe and Alagoas
BR-M1085	Strengthening the Communitary Fund Verde Vida	2009	38,013	To contribute for the promotion of the local and sustainable development of the Region of the Basin of the River Aribiri. Through the support of positive socio environmental actions with economic orientation.
BR-M1065	Technology transfer for a ecoefficient chain value management	2010	984,791	The general objective is to contribute to improve the efficiency and competitiveness of the small and medium enterprises of Bahia. The purpose is to foster the implantation of ecoefficiency measures in the SMEs that make part of the big enterprises chains value.
BR-M1106	Creation of a Microfinance Bank in the Nordeste Region	2011A	750,000	The objective of the project is to develop a sound microfinance institution and promote microfinance investments in Brazil, to increase the availability of financial services for microenterprises. The purpose of the project is to create a new bank specialized in microfinance that will serve the Northeast region.
BR-M1104	Creating the Framework for Carbon Markets in Brazil	2011A	950,000	The project will build the capacity necessary for the Associação Brasileira de Normas Técnicas (ABNT) to become DoE under the UNFC, become an internationally credited entity under ISO 14065, and to implement a pilot for the implementation of GHG standards.
BR-M1103	Development of food and biofuels chains from the sunflower production	2011A	2,000,000	

*Table 6 – SECCI FUND – MSC & SCI - Projects under Execution*

OPUS Number	Name	Year of Approval	Amount (USD)	Description
BR-T1194	Improving Tropical Forest Management as a Strategy for CC Mitigation	2011	300,000	<b>The project will support forest management practices as part of reducing deforestation and promote forest conservation.</b>

<sup>2</sup> MIF projects that are preliminary classified as part of GCI-9 target 3, Climate Change, Sustainable Energy and Environmental Sustainability.





BR-G1001	Taua Solar Photovoltaic Pilot Project	2010	300,000	The Taua solar pilot project (the "Project") will be the first power generation project in Brazil to connect a photovoltaic system into the National Interconnected System ("SIN"). In its pilot stage of 1 MW of direct current, it will already represent the largest project implemented in South America with its energy incorporated into the electrical grid.
BR-X1014	Energy Efficiency Program for low-income clients	2009	1,000,000	Installation of efficient equipment in low-income homes in order to improve social and environmental conditions in CELPA concession areas.
BR-T1114	Biobahia Bio-oil	2009	635,790	The Biobahia Project targets the development of a 50,000 hectares sunflower and jatropha plantation, and the design, construction, operation and maintenance of a 200,000 Ton. per year crushing capacity bio-oil plant in the region of Barra, in the province of Bahia, Brazil ("The Project"). The project will produce and sell sunflower and jatropha vegetable oil for its refining and end use as biodiesel.
BR-T1189	Support for science research centers in Brazil climate	2010	400,000	The program intends to meet many of the barriers facing the issue of climate change in Brazil, particularly in regard to the gaps of knowledge in the areas of monitoring, data collection and analysis of hydro-meteorological
BR-T1167	Support Urban Sustainable Mobility Plan of the city of Rio de Janeiro	2010	1,000,000	This TC aims to support the city of Rio de Janeiro in the organization of an Urban Sustainable Mobility Plan (USMP), in line with the basic principles of the REST strategy.
BR-T1161	Support to the government of Ceara in the preparation of the ICID	2010	166,000	The Technical Cooperation will support the government of Ceará in the preparation of the Second International Conference on Climate, Sustainability and Sustainable Development in semiarid regions ICID, to be held in Ceará, Brazil.
BR-T1140	Energy Efficiency in Minas Gerais	2010	1,000,000	This is a TC to hire consulting services and buy equipment to develop and implement energy efficiency projects in Minas Gerais, helping prepare future investment plans for this sector.
BR-T1149	Requalification of sugarcane cutters	2009	500,000	Reclassify 3,500 sugar cane workers, selected in 118 refineries associated to UNICA. There are 1,500 on vocational courses in the specific to the sector and 2000 on various courses for other sectors.
BR-T1143	Energy Efficiency in São Paulo	2009	1,000,000	The main objective of the Program is to provide technical assistance for the demand-side management and the introduction of efficient systems of energy use in institutions of the Government of Sao Paulo and to establish public policies for the rational use of available energy resources.
BR-T1109	Rio de Janeiro: Support to Non-motorized Transport State Program	2009	480,000	The objective of the technical cooperation (TC) is to provide technical advisory support to the GRJ and assistance in the detailed programming and design activities to consolidate the Non-motorized Transport (NMT) State's Program. The specific objectives are to provide the conditions so modal shift from motorized to non-motorized systems takes place by improving the NMT infrastructure, and improving road and overall safety conditions. Specifically the TC aims to: (i) improve the State's public transport system efficiency; (ii) increase the usage of NMT as an alternative to motorized transport and its use as transit feeder; (iii) improve safety for NMT circulation; and (iv) improve the integration between urban transit and NMT, by improving the quality and accessibility of integration facilities at stations and terminals.
BR-T1107	CDM Methodology for Modal Shift Towards Metro and Light Rail	2008	520,000	This TC will aim to develop a new Clean Development Mechanism methodology to account for the reduction in greenhouse gas emissions as a result of the modal



				shift from road-based to rail-based transport. This modal shift is a result of the improvements in service in the rail-based transport (metro and light train) in Sao Paulo (Brazil). Once developed, the methodology could be used in other cities in LAC.
BR-T1103	Identification of Projects for Sustainable Development in Minas Gerais	2008	160,000	Support the Banco de Desenvolvimento de Minas Gerais (BDMG) in project identification in the areas of energy efficiency, renewable energy, biofuels and carbon markets in the State of Minas Gerais for future support in feasibility and implementation studies.
BR-T1098	CDM Methodology for Carbon Equivalent Reduction in the Sao Paulo Metro	2008	520,000	The Inter-American Development Bank will finance Secretaria de Estado dos Transportes Metropolitanos de Sao Paulo to build a new section of 11.6 km of double track, fully underground rail rapid system between Largo Treze and Chacara Klabin ("LTR-CKB section") in Line 5.
BR-T1086	Feasibility Studies for Biofuel Production in Central America and the Caribbean	2007	750,000	Analysis of the potential of biofuel production in Central America and the Caribbean, as part of South-South technology transfer and cooperation.



*SECCI FUND – MSC & SCI - Projects Completed*

OPUS Number	Name	Year of Approval	Amount (USD)	Description
BR-T1111	Energy Efficiency and Competitiveness	2008	90,000	The IADB together with the Governments of Germany and Switzerland agreed to hold a conference that aims to raise awareness, enrich knowledge and foster concrete programs and projects in favor of energy efficiency in Latin America and the Caribbean. The conference will bring together the private- and public sector, regulators, policymakers and key stakeholders of Europe and Latin America and the Caribbean in order to facilitate knowledge transfer and experiences in energy efficiency and to stimulate investments in this area. This conference will focus on all Latin American and Caribbean countries because of the important role of energy efficiency to increase economic competitiveness and climate change mitigation for the entire region.



## Annex 2: Indicators Matrix

IDB Strategic Objectives	Expected Results	Indicators	Baseline		Objectives		Source	Measurement Frequency	Observations
<b>I. Support national and sub-national level governments (State and Municipal) in the implementation of the National Plan of Climate Change (PNMC) and its sector plans.</b>	Increased institutional capacity to promote sector plans and projects on climate change	Number of lending operations including climate change mitigation / adaptation activities	22 projects	2006-2011	28 projects	2015	OPUS-BID	annual	IDB will have a system to track mitigation and adaptation projects within its systems implemented by 2015
	Increased capacity to apply adaptation and mitigation sector plans to local and sector needs	Number of national frameworks for climate change mitigation supported*	0	2011	1	2015	MMA/VPS-INE/ECC	annual	
	Increased capacity to attract climate change funding at the national and international level	Number of studies of economic implications and financing mechanisms of addressing climate change for States and Municipalities	0	2011	2	2015	Ministério da Fazenda/VPS-INE/ECC	annual	
	Increased capacity at the sector level to implement the National Plan of Climate Change	Percent of staff at institutions at States and Municipalities capacitated about climate change implications and the PNMC that perceive their knowledge has increased	0%	2011	30%	2015	Ministério da Fazenda/MMA/VPS-INE/ECC	annual	
	Increased capacity at the sector level to implement the National Plan of Climate Change	Number of sector implementation studies for the PNMC	0	2011	1	2015	MMA/VPS-INE/ECC	annual	



	Increase the numbers of operations that are directly related to climate change or have components of climate change incorporate into the project design	Number of adaptation/mitigation projects identified and designed at State and/or Municipal level	0	2011	5	2015	MMA/VPS-INE/ECC	annual
	Increased climate change adaptation and mitigation capacity in cities.	Number of cities with appropriate adaptation and mitigation plans	0	2011	1	2015	MMA/VPS-INE/ECC	annual
<b>II. Strengthening of Knowledge Base through new programs, mechanisms and regional cooperation</b>	Increased capacity on dealing with climate change (both adaptation and mitigation) at the sector level	Number of climate change pilot projects in agriculture, energy, health, water and sanitation, transport and housing	31	2006-2011	39	2015	OPUS-BID	annual
	Increased mitigation and adaptation capacity through the adoption of NAMAs and NAPs	Number of Nationally Appropriate Mitigation Action programs (NAMA) for a sector implemented	0	2011	1	2015	OVPS-INE/ECC	annual
		National Adaptation Plan (NAP) for a sector implemented	0	2011	1	2015	MMA/VPS-INE/ECC	annual
	Increased knowledge on best climate change related practices generated from Brazil in LAC	Number of forum for policy and technical dialogue for a sector organized/established	0	2011	1	2015	MCT/ VPS-INE/ECC	annual
		Number of Knowledge Exchange Platforms for a sector and/or technology established	0	2011	1	2015	MCT/ VPS-INE/ECC	annual



<b>III. Enhance the participation of regional and local financial institutions in offering credit lines for investment in low carbon projects.</b>	Increase in the portfolio for renewable energies and energy efficiency of local financial institutions	Number of Financial Institutions capacitated on low carbon projects	0	2011	2	2015	Ministério da Fazenda/VPS-INE/ECC	annual
		Number of portfolios of mitigation projects identified	1	2011	2	2015	OVPS-INE/ECC	annual

