



## Global Environment Facility

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October 19, 2005

Dear Council Member,

UNDP, as the Implementing Agency for the project, ***Brazil: Second National Communication of Brazil to the UNFCCC***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by the Council in September 2005, and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the UNDP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at [www.theGEF.org](http://www.theGEF.org). If you do not have access to the Web, you may request the local field office of the World Bank or UNDP to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

A handwritten signature in black ink, appearing to be "L. Good", written over the word "Sincerely,".

cc: Alternate, Implementing Agencies, STAP



10 October 2005

*hen*  
Dear Mr. Good,

Subject: CC/EA Brazil: Second National Communication – PIMS No. 2613

I am pleased to attach herewith the above-mentioned project document. The brief was approved at the GEF Council Meeting in April 2005. Also attached are the co-financing letter(s) from:

Ministerio de Ciencias y Tecnologia  
Instituto Nacional de Pesquisas

Attached you will also find the response to GEF Secretariat comments.

As per paragraph 29 and 30 of the GEF Project Cycle, we are submitting this project document for circulation to the members of the GEF Council and, subsequently, for your final endorsement.

Thank you in advance for expediting the review and endorsement of this project.

Yours sincerely,

*Warm regards.*

*Frank Pinto*  
Frank Pinto  
Executive Coordinator

Mr. Leonard Good  
Chief Executive Officer and Chairman  
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cc: Mr. Oliver Page, Regional Technical Advisor, RCU LAC



## **UNDP Project Document**

Government of Brazil

United Nations Development Programme

BRA/05/G31/1G/A/01: Second National Communication of Brazil to the UNFCCC  
PIMS # 2613

### **Brief description**

This Enabling Activity project will assist Brazil to prepare the Second National Communication (SNC) to the UN Framework Convention on Climate Change (UNFCCC). The project will extend the coverage of the annual Brazilian Inventory of Anthropogenic Emissions and Removals of Greenhouse Gases to the 1990 to 2000 period, focusing on the sectors/gases that have either a significant share of the greenhouse gas emissions or present a large degree of uncertainty, or both. Downscaling of global circulation models for Brazil will be developed. Studies on vulnerability and adaptation will be undertaken, with a focus on the health sector; energy sector; water resources, floods, and desertification; agriculture, pasture and livestock sector; coastal zone management; and aquatic biodiversity. Brazil's description of national circumstances will be updated, as will the steps taken or envisaged to implement the Convention. Finally, the project will build institutional capacity for implementing the Convention in Brazil including undertaking activities related to climate change education, and awareness raising. cover annual emissions and removals for implementing the Convention in Brazil including undertaking activities related to climate change education, and awareness raising.

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## Acronyms

- ABAL - Brazilian Aluminum Association (*Associação Brasileira do Alumínio*)
- ABEGAS - Brazilian Association of Consumer Gas Distributors (*Associação Brasileira das Empresas Distribuidoras de Gás Canalizado*)
- ABIA - Brazilian Food Industry Association (*Associação Brasileira das Indústrias da Alimentação*)
- ABIQUIM - Brazilian Chemical Industry Association (*Associação Brasileira da Indústria Química*)
- ABPC - Brazilian Association of Lime Producers (*Associação Brasileira dos Produtores de Cal*)
- ABRABE - Brazilian Beverages Association (*Associação Brasileira de Bebidas*)
- AIACC - Assessment of Impacts and Adaptation to Climate Change
- ANA - National Waters Agency (*Agência Nacional de Águas*)
- ANEEL - National Electrical Energy Agency (*Agência Nacional de Energia Elétrica*)
- ANP - National Petroleum Agency (*Agência Nacional do Petróleo*)
- BCB - Central Bank of Brazil (*Banco Central do Brasil*)
- BNDES - National Economic and Social Development Bank (*Banco Nacional de Desenvolvimento Econômico e Social*)
- BRACELPA - Brazilian Pulp and Paper Association (*Associação Brasileira de Celulose e Papel*)
- CATI - Integral Technical Assistance Coordination (*Coordenadoria de Assistência Técnica Integral*)
- CCF - Country Cooperation Framework
- CCP – Climate Change Program
- CDM - Clean Development Mechanism
- CEH - Centre for Ecology and Hydrology
- CENA - Center for Nuclear Energy in Agriculture
- CETESB - Environment Sanitation Agency of the State of São Paulo (*Companhia de Tecnologia de Saneamento Ambiental do Estado de São Paulo*)
- CIDES - Interministerial Committee for Sustainable Development (*Comissão Interministerial para o Desenvolvimento Sustentável*)
- COOPERSUCAR - Cooperative of Producers of Sugar Cane, Sugar and Alcohol of the State of São Paulo (*Cooperativa dos Produtores de Cana, Açúcar e Alcool do Estado de São Paulo*)
- COPPE – Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering of the Federal University of Rio de Janeiro (*Instituto Alberto Luiz Coimbra de Pós-Graduação e Pesquisa em Engenharia - UFRJ*)
- CPTEC - Center for Weather Forecasts and Climate Research (*Centro de Previsão do Tempo e Estudos Climáticos*)
- CRU - Climate Research Unit
- CVM – Brazilian Securities Commission (*Comissão de Valores Mobiliários*)
- DDC - Data Distribution Centre

ELETRONBRAS - Brazilian Electric Power Company (*Centrais Elétricas Brasileiras*)

EMBRAPA - Brazilian Agricultural Research Corporation (*Empresa Brasileira de Pesquisa Agropecuária*)

ENSO - El Niño-Southern Oscillation

FAPESP - Foundation for the Support of Research in the State of São Paulo (*Fundação de Amparo à Pesquisa do Estado de São Paulo*)

FBDS - Brazilian Foundation for Sustainable Development (*Fundação Brasileira para o Desenvolvimento Sustentável*)

FINEP - Studies and Projects Financing Institution (*Financiadora de Estudos e Projetos*)

FIOCRUZ - Oswaldo Cruz Foundation (*Fundação Oswaldo Cruz*)

FNC - First National Communication

FUNCATE - Foundation for Space Research, Application and Technology (*Fundação da Ciência, Aplicação e Tecnologias Espaciais*)

GCM - General Circulation Models

GEF - Global Environment Facility

GHG - Greenhouse Gas

GSFC - Goddard Space Flight Centre

IBAMA - Brazilian Institute for the Environment and Renewable Nature Resources (*Instituto Brasileiro de Meio Ambiente e Recursos Naturais Renováveis*)

IBGE - Brazilian Institute for Geography and Statistics Foundation (*Fundação Instituto Brasileiro de Geografia e Estatística*)

IBRD - International Bank for Reconstruction and Development

INPE - National Institute for Space Research (*Instituto Nacional de Pesquisas Espaciais*)

IPCC - Intergovernmental Panel on Climate Change

IPEA - Institute of Applied Economic Research Foundation (*Instituto de Pesquisa Econômica Aplicada*)

IRGA - Rio Grandense Rice Institute (*Instituto Rio Grandense do Arroz*)

LULUCF - Land Use, Land Use Change and Forestry

MCT - Ministry of Science and Technology (*Ministério da Ciência e Tecnologia*)

MDIC - Ministry of Development, Industry and Commerce (*Ministério do Desenvolvimento, Indústria e Comércio*)

MMA - Ministry of Environment (*Ministério do Meio Ambiente*)

MME - Ministry of Mines and Energy (*Ministério das Minas e Energia*)

NASA - National Aero-Space Agency

NCEP - National Center for Environment Predictions

NGO - Non Governmental Organization

PETROBRAS - Brazilian Petroleum S.A. (*Petróleo Brasileiro S.A.*)

PPA - Multiannual Plan (Plano Plurianual)

PRECIS - Providing Regional Climates for Impacts Studies

PROCEL - National Energy Conservation Program (*Programa Nacional de Conservação de Energia*)

RADAM - Radar in Amazonia (*Radar na Amazônia*)

SNC - Second National Communication

SNIC - National Cement Industries Association (*Sindicato Nacional da Indústria de Cimento*)

SRES - Special Report on Emissions Scenarios

SST - Sea Surface Temperature

UBIBRA - Brazilian Wine and Grape Growers Union (*União Brasileira de Vinicultura*)

UEB - Useful Energy Balance

UFRGS - Federal University of Rio Grande do Sul (*Universidade Federal do Rio Grande do Sul*)

UNCED - United Nations Conference on Environment and Development

UNDP - United Nations Development Program

UNEP - United Nations Environment Program

UNESP - State University Julio de Mesquita Filho (*Universidade Estadual Júlio Mesquita Filho*)

UNFCCC - United Nations Framework Convention on Climate Change

USCS - United States Country Studies Initiative

USP - University of São Paulo (*Universidade de São Paulo*)

## SECTION I : Elaboration of the Narrative

### PART I: Situation Analysis

#### *Context and global significance*

1. Brazil is the largest country in South America, with an area of 8,547,403.5 sq. km (3,300,152,4 sq. mi.), and the fifth in the world.
2. Because of its great territorial extension, Brazil presents differentiated precipitation and temperature regimes. All over the country, a great variety of climates with distinct regional characteristics can be found, from rainy equatorial climate in the North region to semi-arid climate in the Northeast, with low rainfall rates.
3. Approximately 40% (3.5 million km<sup>2</sup>) of the total land area of Brazil is covered by the Amazonian Forest, of which 2 million km<sup>2</sup> is composed of dense forest and 1.1 million km<sup>2</sup> of open forest. In addition, Brazil has a large savanna area (“Cerrado”, over 2.5 million km<sup>2</sup>), a semi-arid vegetation region (“caatinga”, over 1.5 million km<sup>2</sup>), a remaining part of the Atlantic Forests and also an important swamp region (“Pantanal”, around 140,000 km<sup>2</sup>). With its vast size and geographical position, Brazil is also one of the most important repositories of the world’s biodiversity. Moreover, Brazil has also 6.5 million ha of planted forests composed mainly of Eucalyptus and Pinus species.
4. Brazil has the fifth greatest population in the world, surpassed only by China, India, the United States, and Indonesia. In the last decade, the Brazilian population accounted for about 2.7% of the world population, in spite of the growth deceleration that happened in the last two decades because of a decline in fertility. Population distribution in the country is highly concentrated and the tendency for the reduction of such disparities by internal migration – the North and Mid-West region have the greatest growth rates in the period, in addition to the significant decline in the growth rate of the Southeast region – should be qualified in the light of the density indicators. In terms of the age structure, the population is aging, with an expressive growth in the participation of the age group of 15 to 59, also followed by the segment over 60 years old.
5. Brazil has the twelfth largest GNP in the world, measured by the purchase power parity. At present, Brazilian industry accounts for 34% of national production, agriculture for approximately 8% and the services sector, for almost 58%. Brazil has one of the most diversified and complete industrial infrastructures in Latin America and even in the Southern Hemisphere. It has, therefore, enormous growth potential taking into account its market economy, its insertion in the global market, and the size of its own market. Despite declining significantly with the process of industrialization, the share of agriculture in the composition of Brazilian exports is still important (over a quarter of Brazilian exports).
6. The most recent set of information on the economic and social indicators for the country evinces the effects of the economic stabilization plan launched in 1994, such as the control of inflation, better income distribution, and the slow but continuous progress of the main structural variables of the Brazilian social conditions. There has been a decline in the illiteracy rate, children mortality, and birth rates, as well as an improvement in the access to education, electricity resources and piped water, consumption of durable goods, and access of women to the labor market. However, these results still depict a country marked by deep social and regional inequalities. The differences between rich and poor continue to be extremely high, poverty concentrations in the Northeast are almost unchanged, and it is difficult for the labor market to provide a regular job and a proper salary to a great part of the population.

7. Hydroelectric energy is the main source of electricity in Brazil, representing 95% of the total electricity produced in the country. This important primary source stands out for its availability, economic attractiveness and non-GHG emission profile.

#### *8. Threats, root causes and barriers analysis*

##### *Threats to Global Values*

9. According to Article 1 of the Climate Convention, climate change means a change of climate that is attributed directly or indirectly to human activity and alters the composition of the global atmosphere, being in addition to natural climate variability observed over comparable time periods.

10. Even though climate has been varying due to natural causes, recent simulations using sophisticated climate and coupled climate-ocean-vegetation models have indicated that the excess of greenhouse gases has been producing changes in the behavior of the atmosphere. These changes, some of them possibly irreversible, have resulted in modifications of the circulation, temperature and rainfall regimes all around the planet.

11. There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities (IPCC, 2001). In the light of new evidence and taking into account the remaining uncertainties, most of the observed warming over the last 50 years is likely to have been due to the increase in GHG concentrations. Human influence will continue to change atmospheric composition throughout the 21<sup>st</sup> century.

##### *The Underlying Root Causes*

12. The Preamble of the UNFCCC recognizes that “change in the Earth’s climate and its adverse effects are a common concern of humankind” and that “the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions.”

13. The UNFCCC also recognizes that the largest share of historical and current global emissions of GHGs has originated in developed countries and that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs.

##### *Barriers*

14. This Enabling Activity project aims at softening the main barriers identified in Brazil related to climate change: lack of capacity, lack of information and lack of financial resources for further activities. Moreover, there is the need to strength institutional capacity, need to strength methodologies and need to improve data gathering.

#### *Institutional, sectoral and policy context*

15. The actions related to climate change that have been undertaken in the country emerged after Brazil’s ratification of the UNFCCC in February 1994. The action plan was defined by the Brazilian Government, and especially by the Ministries of Science and Technology and of External Relations, in order to meet the initial commitments of Brazil under the Convention.

16. The strategy proposed by the Brazilian government was to give priority to the work on the Brazilian inventory of anthropogenic GHG emissions, which would have a dual objective – diagnosis of the current situation and, therefore, focus on the main initial commitment under the Convention and create capacity in

Brazil. There was also the intention that the strategy for the inventory preparation is as comprehensive as possible in terms of gases and sectors analyzed and provide for the creation of endogenous capacity in the country. The capacity acquired by the institutions and specialists involved in the first phase will assist the implementation of future mitigation, adaptation and vulnerability plans, which are also commitments set out in the Convention. Another relevant aspect was the development of climate change education and awareness-raising activities, given the limited amount of information existing in Brazil about the issue, and especially the small number of publications in Portuguese.

17. The implementation strategy of the Climate Change Program was based on the establishment of partnerships and on the decentralized execution of activities. In terms of financing, the implementation strategy relied strongly on external resources initially (Global Environment Facility - GEF and U.S. Country Studies Initiative - USCS), while providing for a gradual transition in the future to a greater share of domestic resources in the implementation of the action plan.

18. Since 1996, a greater involvement of institutions and specialists in the action plan has been sought, both in the development of the inventory and in the discussion of issues relevant to the negotiation and implementation of the Convention and the Kyoto Protocol. In the case of the inventory, three different types of involvement have been envisaged:

- (i) institutions and specialists contracted with external financial resources;
- (ii) federal institutions invited by MCT, and
- (iii) private companies and sectoral associations that participated on a voluntary basis.

### *Institutional Framework*

19. Brazil has always sought to play a leading role in the arena of global environmental issues, following the example of the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992. Therefore, since the beginning of the activities related to climate change in Brazil, institutions have been created to deal with this issue and to implement the Convention in the country.

20. In response to the mandate given by the Interministerial Committee for Sustainable Development (CIDES, created by Presidential Decree no. 1160 of June 21, 1994), the responsibility for the co-ordination of the implementation of the UNFCCC was given to MCT. Therefore, MCT established the General Coordination on Global Climate Change in August 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

21. In 1999, concern with the further institutionalization of the climate change issue, because of its strategic characteristics, led to the creation by the Presidential Decree of July 7, 1999, of the Interministerial Commission on Global Climate Change, with the purpose of coordinating the actions of the government in this area. The Ministers of Science and Technology and of Environment are, respectively, the President and the Vice-President of the Commission. MCT is the Executive Secretary of the Commission and provides technical and administrative support to its operation.

22. The Commission is constituted of representatives of the Ministries of External Relations; Agriculture and Food Supply; Transport; Mines and Energy; Planning, Budgeting and Management; Environment; Science and Technology; Development, Industry and Trade; of Cities; and the Civil House of the Presidency of the Republic. The Decree creating the Commission calls for co-ordination with representative bodies from civil society, with the participation of public and private bodies and specialists.

23. The attributions of the Commission include: to provide a statement, whenever requested, on proposals for sectoral policies, legal instruments and norms that contain a relevant component for the mitigation of global climate change and the Country's adaptation to its impacts; to provide inputs to the Government's positions in the negotiations under the UNFCCC and subsidiary instruments of which Brazil takes part; to define eligibility

criteria additional to those considered by the Bodies of the Convention in charge of the CDM, as provided for in Article 12 of the Kyoto Protocol to the UNFCCC, pursuant to national sustainable development strategies; to analyze statements on projects that result in emission reduction and that are considered eligible to the CDM, as referred to in the previous item, and approve them, when appropriate; and to establish agreements with representative entities of the civil society, in order to promote actions by the governmental and private bodies with a view of meeting the commitments accepted by Brazil under the UNFCCC and subsidiary instruments of which Brazil is part.

24. In addition to the Government, the Brazilian non-governmental organizations, the private sector, and the academic community have also been manifesting interest in enhancing the debate on climate change, in order to allow a greater integration of the diverse social actors, increasing awareness on the threats posed by climate change and also on the opportunities it may bring. Such interest inspired the creation, by the Decree no. 3515 of June 20, 2000, of the Brazilian Forum on Global Climate Change, aimed at serving as a public arena for discussion of the issue.

25. Moreover, it is worth mentioning an important element. The Federal Government included in its Multiannual Plan (PPA) a program called “Climate Change” (*vide* <http://www.mct.gov.br/clima/ingles/brasil/ppa.htm>). The first phase of the program covered the 2000-2003 periods and supports the development of scientific information related to GHG emissions as the basis for the definition of national policies for responding to climate change.

26. The program activities have been planned as follows:

*Action 1 – Development of studies about vulnerability and adaptation to the impacts of climate change*

*Action 2 – Development of Predictive Models to keep abreast of climate change*

*Action 3 – Development of the National Inventory of Anthropogenic Emissions of Greenhouse Gases*

*Action 4 – Implementation of a monitoring system for greenhouse gas emissions*

*Action 5 – Information system for the greenhouse effect*

*Action 6 – Development of climate change mitigation studies*

27. Action 3 is not intended at financing the preparation of national communication, which should be financed by the GEF as stated in Article 4.3 of the UNFCCC. This action aims at promoting additional activities such as publications and discussions on the results of the inventory with the relevant community, by means of seminars and broad dissemination and the publication (in Portuguese, English and Spanish) of the results of the studies carried out by many institutions participating in the inventory development process.

28. A second phase of the Climate Change Program started in 2004 and will be completed in 2007.

29. The resources provided by the PPA have been complementary in nature and have enabled Brazil to continue its efforts towards the implementation of the Convention, bridging the existing gap of funds since the end of the first enabling activity in December 2000, allowing for the continued implementation of some activities financed by the federal budget under the co-ordination of MCT, and especially keeping the climate change office operational. This program will contribute to complement, improve and enhance the research on climate change in Brazil, particularly in areas where few researchers have been working, thus accelerating the implementation of the Convention in Brazil.

30. However, the funds available are modest and do not allow a comprehensive approach to climate change in Brazil. Total financial resources available for the program during fiscal year 2002/2003 amounted to R\$ 842,000 (approximately US\$ 330,000). Similarly, the same amount is allocated for the 2004/2007 period on an annual basis.

### *Stakeholder analysis*

31. The development of the National Communication is a multidisciplinary effort, which involved in the FNC more than 150 institutions and 700 specialists from all regions of the country. In the SNC the same institutions and specialists will be involved and, furthermore, the involvement of new institutions and specialists will be sought.

32. Because of its scope and level of detail, and taking into account that it will address the emissions of the principal GHGs (including CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, CO, HFC, NO<sub>x</sub>, CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, SF<sub>6</sub>) from the energy, industry, forestry, agriculture, and waste treatment sectors, the Brazilian inventory of anthropogenic GHG emissions and removals by sinks not controlled by the Montreal Protocol will involve specialists in many disciplines from several ministries (Ministry of Mines and Energy - MME, of Environment -MMA, of Development, Industry, and Commerce -MDIC, etc.), federal institutions (Brazilian Petroleum, Inc. - Petrobras, Eletrobras, Brazilian Agriculture and Livestock Research Company - EMBRAPA, INPE, among others), state institutions (Environment Sanitation Agency - CETESB, Power Company of the State of Minas Gerais -Cemig, among others), sectoral associations (Brazilian Aluminum Association - ABAL, Brazilian Association of Consumer Gas Distributors - ABEGÁS, Brazilian Chemical Industry Association -ABIQUIM, Brazilian Paper and Pulp Association - Bracelpa, Sugar Cane, Sugar and Alcohol Producers Coop. - Copersucar, among others), NGOs (Foundation for Science, Technology and Space Applications - Funcate, José Bonifácio Foundation, among others), universities and research centers (Graduate Programs in Engineering of the Federal University of Rio de Janeiro - COPPE/UFRJ, USP, Federal University of Rio Grande do Sul -UFRS, among others).

33. Considering the successful experience of the Brazilian Government Climate Change Site on the Internet ([www.mct.gov.br/clima](http://www.mct.gov.br/clima)) the General Coordination on Global Climate Change, in charge of coordinating the implementation of the UNFCCC in Brazil, believes that this is the most effective and low-cost approach to involve the appropriate stakeholders and to exchange information.

The Internet site has strengthened the capacity of the coordinating agency and helped decentralize the preparation of the National Communication, enabling the total involvement of all the relevant institutions, regardless of their location, and establishing a formal channel to bring together and disseminate information. Links were made to the home pages of Brazilian and international institutions that lead the public directly to issues related to the area, sparing people from having to go through the complex process of navigating to the institutional home pages. Developed in four languages (Portuguese, Spanish, English, and French), the Brazilian climate change site goes beyond the Brazilian public, and has become a point of reference internationally, allowing Brazil to take part in the global debate on climate change.

34. The preparation of the project brief related to the Second National Communication has been developed in close collaboration with various institutions that took part in the elaboration of the First National Communication, such as the Brazilian Agriculture and Livestock Research Company - EMBRAPA, the National Institute for Space Research - INPE, the Brazilian Petroleum, Inc. - Petrobras, the Environment Sanitation Agency - CETESB, the Foundation for Space Research, Application and Technology - FUNCATE, the Graduate Programs in Engineering of the Federal University of Rio de Janeiro - COPPE/UFRJ, among others.

35. For additional information, see Stakeholder Participation plan in Section IV.

### *Baseline analysis*

36. In the default scenario, without GEF intervention, climate change activities in Brazil would be limited to the financial resources allocated in the Brazilian budget, which would not be sufficient to allow the implementation of the UNFCCC in the country. The domestic resources available for the Program are low (R\$ 842,000 or less than US\$ 330,000 on an annual basis for the period 2000-2007). Furthermore, it would be difficult to maintain the Climate Change Program in Brazil, with the possibility of jeopardizing the progress already achieved in capacity building and institutional strengthening.

## **PART II : Strategy**

### *Project Rationale and Policy Conformity*

37. The commitments of the developing countries, including Brazil, as Parties to the UNFCCC are described under paragraph 1 of Article 4 of the Convention, which establishes common obligations for all Parties, taking into account the common but differentiated responsibilities of countries and their specific national and regional development priorities, objectives and circumstances. One of the main commitments is to develop, periodically update, publish and make available to the Conference of the Parties, inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases (GHGs) not controlled by the Montreal Protocol.

38. Developing country Parties have committed themselves to providing the UNFCCC with adequate information on the status of implementation of such obligations, as called for under Article 12.1. National communications are required to include the above mentioned inventory of net anthropogenic emissions of GHGs not included in the Montreal Protocol, and a general description of the steps taken or envisaged to implement the Convention.

39. According to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. The financial mechanism of the UNFCCC (Article 11) is the Global Environment Facility - GEF.

40. This project has been prepared according to UNFCCC guidelines for National Communications (the project brief is in accordance with Decision 17/CP. 8 - guidelines for the preparation of national communications from Parties not included in Annex I to the Convention) and, therefore, fits in Enabling Activities strategies of the GEF. Thus, this project is the basis for other Climate Change projects in the portfolio of UNDP/GEF in Brazil and will contribute enormously to all other activities to be performed in the country within the scope of the UNFCCC.

41. In the default scenario, without GEF intervention, climate change activities in Brazil would be limited to the financial resources allocated in the Brazilian budget, which would not be sufficient to allow the implementation of the UNFCCC in the country. The domestic resources available for the Program are low. Furthermore, it would be difficult to maintain the Climate Change Program in Brazil, with the possibility of jeopardizing the progress already achieved in capacity building and institutional strengthening.

### *Project Goal, Objective, Outcomes and Outputs/activities*

42. In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

43. Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

44. The immediate objective of the project is to prepare the Second National Communication of Brazil to the UNFCCC and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

45. Brazil is concerned with the problem of global warming, considering that it is an important issue for the future generations of all nations. Despite other overriding socioeconomic priorities, Brazil has played an important role in the international discussions and scientific assessment of climate change, as well as in setting up an international institutional framework.

46. Although Brazil, as a developing country, does not have commitments to reduce or limit its anthropogenic emissions of GHGs, there are many programs in Brazil that result in a considerable reduction of GHG emissions and contribute to the ultimate objective of the UNFCCC. Brazil takes seriously its commitments under the UNFCCC, especially developing, periodically updating, publishing and making available to the Conference of the Parties, inventories of anthropogenic emissions by sources and removals by sinks of all the GHGs not controlled by the Montreal Protocol (in accordance with Article 4.1 and 12.1 of the UNFCCC).

47. As mentioned above, the strategy proposed by the Brazilian government was to give priority to the preparation of the Brazilian inventory of GHG emissions and removals. The First Enabling Activity Project allowed Brazil to assess the emissions by sources and removals by sinks from the energy, agriculture and livestock, industry, land use change and forestry, and waste treatment sectors, identifying the most important sources and sinks.

48. Brazil finalized all background reports (available at our Internet site on [http://www.mct.gov.br/clima/ingles/comunic\\_old/invent1.htm](http://www.mct.gov.br/clima/ingles/comunic_old/invent1.htm)) and submitted its Initial National Communication to the UNFCCC on December 10<sup>th</sup> 2004, at the X Conference of the Parties to the United Nations Framework Convention on Climate Change. Brazil faced many difficulties in finalizing and submitting its First National Communication - FNC on account of technical and budgetary reasons. The technical reasons are related to the pioneer and complex work involved in preparing an initial inventory because of the lack of activity data and emission factors for several greenhouse gases and sectors. The budgetary constraints to which the Brazilian Global Climate Change Coordination office was submitted after the end of the GEF Project in December 2000 caused a reduction in our staff and additional delays in the preparation of the National Communication, since we had to rely on the small federal budget allocated for climate change.

49. The First Enabling Activities Project has been fundamental to capacity building activities: more than 150 institutions and 700 experts from different sectors and parts of the country were engaged and the Ministry of Science and Technology, responsible for the implementation of the project, was able to organize a “country-team”, with specialists in charge of assessing data and verifying the quality of information provided by the institutions involved. Hence, the Second National Activities Project will be essential for the continuation of the “country-team” approach, in accordance with decision 2/CP. 7, paragraphs 1 (c), 3, 4 and 5 of decision 6/CP.7, and decision 6/CP.8. A discontinuation of the program in the country could jeopardize the continuous process of preparation of the National Communication to the Convention due to a breakdown of the established staff team and the impossibility to ensure support for the continuation of on-going projects.

50. Even if the First Project had to cover all IPCC sectors, emphasis was already given to the sectors that were believed to require intensive country specific research, as the Land-Use Change and Forestry and the Agriculture sectors. This policy was clearly right, as the results of the Inventory, presented in the table below, show.

Emissions Share by Sector	
Sector	Year
1994	
<b>CO<sub>2</sub> net emissions (%)</b>	
Land Use Change and Forestry	75
Energy - Road Transport	8
Energy – Industry	7
Others	10
<b>CH<sub>4</sub> emissions (%)</b>	
Agriculture – Enteric Fermentation	71
Waste	6
Others	23
<b>N<sub>2</sub>O emissions (%)</b>	
Agriculture – Soils	87
Agriculture – Manure Management	4
Others	9

51. Furthermore, the Land-Use Change and Forestry Sector and the Agriculture Sector were the sectors where the uncertainty was identified as the most important, both for activity data and emission factors. In particular, the use of IPCC default emission factors was judged extremely precarious as country specific conditions, together with the emissions share of those sectors, lead to very high uncertainty and biased estimates. This characteristic is enhanced by the size and regional diversity of the country.

52. No formal key source category analysis was conducted in the First Enabling Activities Project, as the procedure was judged scientifically incorrect, as it relies on the use of the GWP concept that does not reflect correctly the equivalence of the gases regarding the influence to the climate system.

53. As it was pointed out in the revision undertaken during year 2000 (<http://www.mct.gov.br/clima/ingles/negoc/proposta.htm>) of the methodological approach developed by Brazil in 1997 (FCCC/AGBM/1997/Misc.1/Add. 3), the so-called Brazilian Proposal, the Intergovernmental Panel on Climate Change (IPCC) defined GWP(t) as the ratio of the accumulated radioactive forcing at time t, resulting from a unit impulse of additional concentration of greenhouse gas g at time t=0, and the accumulated radioactive forcing at time t, resulting from a unit impulse of additional concentration of carbon dioxide at time t=0. There is a fundamental difficulty with this definition, in that the accumulated radioactive forcing is a variable that, once it reaches a certain value, it never returns to zero, even when the additional concentration returns to zero if all emissions are stopped. The ratio adopted by the IPCC also corresponds to the ratio of temperature increases, under the same conditions, and with two additional limiting conditions: first, that all additional concentration exponential decay time constants be very short in comparison with any of the temperature increase adjustment time constant; and second, that the lag time t be much shorter than any adjustment time constant.

54. Also, it must be recalled that the use of the GWP is associated with a policy decision under the Kyoto Protocol. Its usage to establish equivalence between gases for the inventory under the Convention is technically groundless.

55. Even so, any of the sectors highlighted in the table above would qualify as key categories for any equivalence measure that could be established.

56. Therefore, the Second National Communication – considering the capacity acquired by the institutions and specialists involved – can enhance and extend the studies on activity data and emission factors related to such categories and also regarding sectors that involve a high degree of uncertainty, considering the lack of emission factors and/or activity data (savanna burning, waste, soil carbon emissions and, planted forests emissions/uptake).

57. Priorities for the Second National Inventory were then set taking in consideration these results together with an assessment of the feasibility and cost/benefit of each research activity proposed. It is worth mentioning that a limited amount of resources will be assigned to activities related to N<sub>2</sub>O emissions in the SNC, taking into consideration that decreasing the uncertainty of N<sub>2</sub>O emissions is very difficult.

58. Moreover, in this second stage special attention will be given to studies on vulnerability to climate change impacts. Initial studies on strategic areas, in accordance with Brazilian national circumstances, will be emphasized. Another relevant aspect will be to further develop activities regarding climate change education, and awareness rising.

59. Therefore, this Enabling Activity project will assist Brazil with the enabling activities necessary to prepare the Second National Communication (SNC) to the UN Framework Convention on Climate Change (UNFCCC). The project is envisaged comprising five objectives with related outcomes, outputs, activities and sub-activities (see detailed project attached).

60. Objective 1 is entitled "Preparation of National Inventory Refinement". The objective of the second phase is to refine the Brazilian Inventory of Anthropogenic Emissions and Removals of Greenhouse Gases and to extend its coverage to the 1990 to 2000 period in an annual basis, as well as the strengthening of the national structure established for the estimation of GHG. It will focus on the sectors/gases that have either a significant share of the emissions or present a large degree of uncertainty, or both, taking in consideration the efforts required to improve the estimates. The development of a national inventory is a resource-intensive undertaking and priorities were established for refining estimates of emissions only for the main sectors and gases, because the estimation methodology and data quality can improve with time. In this sense, the preliminary results of the First Brazilian Inventory have helped in selecting the priority research studies to be carried in this second phase.

61. Objective 1 has two Outcomes: Inventory Improvement and Extension carried out (Outcome 1.1) and Strengthening of the National Structure Established for the Estimation of Greenhouse Gas Emissions (Outcome 1.2).

62. Outcome 1.1 has five related outputs: Output 1.1.1 - Inventory for the Energy Sector elaborated (involving the activities: assess and improve the Energy Balance Information, improve and extend the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions); Output 1.1.2 - Inventory for the Industry Sector elaborated (involving the activities: improve the assessment for the cement production sector, improve activity data and assessment for lime production, limestone and dolomite use sectors, improve activity data and assessment of iron and steel industry sector, improve activity data and assessment of chemical industry sector, improve activity data and assessment of the production and consumption of HFCs, PFCs and SF<sub>6</sub> sector); Output 1.1.3 - Inventory for the Agricultural Sector elaborated (involving the activities: improve country specific emission factors for livestock enteric fermentation and manure management sectors, improve the assessment of N<sub>2</sub>O emissions from agricultural soils, develop country specific emission factors for rice cultivation and improve and extend activity data, improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning, and improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas); Output 1.1.4 - Inventory for the Land-Use Change and Forestry Sector elaborated (involving the activities: improve the assessment of emissions for the forest and grassland conversion sector, improve the assessment of emissions for the changes in forest and other woody biomass sector, improve activity data and assessment of emissions of the CO<sub>2</sub> emissions and removals from soils sector, and methane emissions from water reservoirs); Output 1.1.5 - Inventory for the Waste Sector elaborated (involving the activities: improve data and extend estimates for solid waste disposal sector, improve data and extend estimates for wastewater handling sector, and estimate the GHG emissions from waste incineration sector).

63. Outcome 1.2 has two related outputs: Output 1.2.1 - Establish Quality Control and Quality Assurance Procedures (involving two activities: develop and implement a quality control pilot plan, and develop and implement quality assurance procedures); Output 1.2.2 - Establish a Database for Activity Data and Emission Factors (involving one activity: develop a database for storing activity data and emission factors, keeping track of methodology and assumptions underlined in their establishment).

64. Objective 2 is entitled “Methodological Approach regarding Vulnerability Assessment and Adaptation Measures Elaborated” and has two Outcomes: Outcome 2.1 - Regional Modeling of Climate and Climate Change Scenarios Elaborated; and Outcome 2.2 - Vulnerability and Adaptation Research and Studies Concerning Strategic Sectors that are Vulnerable to the Impacts Associated with Climate Change in Brazil Carried Out.

65. Outcome 2.1 is related to the need for downscaling methods for Brazil that can be applied to the climate change scenarios based on global climate models, in order to give more detailed projections of climate with a higher spatial resolution than that provided by a global climate model. This Outcome has 4 related Outputs: analyze climate change scenarios for South America based on global climate change models from the IPCC-Data Distribution Center (IPCC-DDC) for different SRES scenarios (provided by the IPCC-DDC); develop and improve the regional Eta/CPTEC model; develop and analyze climate-change downscaled scenarios for Brazil, making use of the new super computer being installed at the Center for Weather Forecasting and Climate Studies – CPTEC; and enable the specialists of the CPTEC/INPE (National Institute for Space Research) to develop capacity for climate modeling on longer time scales, and to develop capacity building in V&A. The participating countries in this regional model are: Bolivia, Colombia, Ecuador and Uruguay. Letters of commitment from the Government of each participating country are attached for official record.

66. Outcome 2.2 aims at developing a preliminary analysis of the impacts associated to climate change in key areas in accordance with Brazilian national circumstances, mainly in those areas that vulnerability is influenced by physical, social and economic factors. The initial goal is to analyze areas considered to be strategically relevant, where the impacts associated to climate change can be important to Brazil, and that could be studied independently while Brazilian future climate scenarios have not been concluded. This strategy would correspond to the steps “Assessing current vulnerability” and “Assessing future climate risks” of the Adaptation Policy Framework of the UNDP/GEF. However, further development of some results of this Outcome will depend on future results achieved in developing climate regional models (Outcome 2.1), which will provide more reliable scenarios for South America, in respect to the impacts of climate change either on mean surface temperature or on precipitation patterns. The selected areas are outlined in the six related Outputs of this Outcome: Output 2.2.1 – Report on Vulnerability and Adaptation in the Health Sector elaborated (including one activity: study the vulnerability to climate related diseases - such as malaria, leishmaniasis and cholera - and adaptation measures); Output 2.2.2 – Report on Vulnerability and Adaptation in the Energy Sector elaborated (including one activity: evaluate the vulnerability of the power sector and possible adaptation measures); Output 2.2.3 – Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification elaborated (including one activity: estimate the biophysical impacts of climate change on hydrologic resources in terms of water quantity – annual and seasonal distribution); Output 2.2.4 – Report on Vulnerability and Adaptation in the Agriculture elaborated (including one activity: study of the possible effects of climate change on the Brazilian agricultural sector); Output 2.2.5 – Report on Vulnerability and Adaptation in the Coastal Zone Management elaborated (including one activity: analyze the overall sea level rise in Brazil as a consequence of climate change); Output 2.2.6 – Report on Vulnerability and Biodiversity elaborated (including one activity: analyze the climate change effects on selected biodiversity aspects in Brazil, which is coral’s photo symbiotic organisms – coral bleaching); and Output 2.2.7 - Establish a Coordination between the elaboration of the Regional Modeling of Climate and Climate Change Scenarios and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil, as well as to the inventory of greenhouse gas emissions and removal (Outcome 1.1).

67. Objective 3 is entitled “Description of the Brazilian National Circumstances and the Steps Taken or Envisaged to Implement the Convention prepared” and has two related Outputs: Output 3.1 - Elaborate a Report

on National Circumstances (including the activities: elaborate a report about the National and Regional Development Priorities; elaborate a report about existing institutional arrangements relevant to the preparation of the inventory on a continuing basis, including the development of indicators to assess the sustainability of the National Communication process in the country, and a report about special circumstances, including the special needs and concerns arising from the adverse effects of climate change and/or of the implementation of response measures); and Output 3.2 - Describe the Steps Taken or Envisaged to Implement the Convention in Brazil (including the activities: describe programs containing measures to mitigate climate change implemented or been elaborated in Brazil, describe programs implemented or been elaborated in Brazil containing measures to facilitate adequate adaptation to climate change, and describe other information considered relevant to the achievement of the objective of the Convention in Brazil, regarding transfer of technologies, research and systematic observation, education, training and public awareness, capacity building activities and, information and networking related to climate change described). The description of steps taken or envisaged to implement the Convention in Brazil will be prepared in accordance with Article 4.1 of the Convention and with the UNFCCC Decision 17/CP.8.

68. Objective 4 is entitled “Public Awareness and Education Strategy in place” and aims at building institutional capacity in Brazil for promoting and cooperating in education, training and public awareness related to climate change. This Objective has one related Outcome: Outcome 4.1 – Spread of information, publications of documents, organization and participation in events related to climate change issues. This Outcome involves two Outputs: Output 4.1.1 - Publish documents and reports related to the issue elaborated especially by the IPCC, the UNFCCC Secretariat and also by the project itself and by other relevant institution; and Output 4.1.2 Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the updated national GHG inventory.

69. Objective 5 is entitled “Preparation of the Second National Communication” .The objectives previously described, especially the objectives 1, 2 and 3, are related to the components of the national communication. Therefore, the envisaged outcome for this objective include translating, editing and publishing the final report of the Second National Communication, in order to submit it to the UNFCCC. This Objective has one Outcome 5.1 - Publish Brazilian Second National Communication in English and Portuguese. This draft final version of the Second National Communications will be also submitted to the GEF to finalize project activities.

70. See also Logical Framework in Section II.

#### *Project Indicators, Risks and Assumptions*

71. Regarding Outcome 1.1 and related outputs of Objective 1 (Preparation of National Inventory Refinement), the objectively verifiable indicators will be the inventories elaborated for the respective areas and, basically, the risks are related to the delay of such a preparation. Regarding Outcome 1.2 of the same Objective, the objectively verifiable indicators will be the development of the easily accessible public database on Brazilian GHG emissions (for output 1.2.1, the indicator will be the maintenance of the produced inventory documentation; and for output 1.2.2, the indicator will be the development of the emission factor and activity data database. The risk involved in this Outcome is data not made available.

72. Regarding Outcome 2.1 and outputs 2.1.1, 2.1.2 and 2.1.3 of Objective 2 (Methodological Approach regarding Vulnerability Assessment and Adaptation Measures Elaborated), the objectively verifiable indicators will be the report/studies elaborated for the respective outputs and, basically, the risks are the delay and technical problems related to downscaling and the development of the regional model. As for output 2.1.4, the objectively verifiable indicators will be the development of the capacity for climate modeling on longer time scales and the risk involved is specialists not trained. Regarding Outcome 2.2 and related outputs of this same Objective, the objectively verifiable indicators will be the reports elaborated for the respective areas and, basically, the risks are related to the delay of such a preparation.

73. Regarding Objective 3 (Description of the Brazilian National Circumstances and Steps Taken or Envisaged to Implement the Convention prepared), the objectively verifiable indicators will be the reports elaborated for the respective areas and, basically, the risks are related to the delay of such a preparation.

74. Regarding Objective 4 (Public Awareness and Education Strategy in place) and related outputs, the objectively verifiable indicators will be general public information related to climate change issues spread and the risks are related to the delay of the preparation of such material as well as poor participation and low level of access to the website.

75. Regarding Objective 5 (Preparation of the Second National Communication) and related outcome, the objectively verifiable indicator will be the finalization of the Brazilian Second National Communication and the risk involved is the delay of such a preparation.

76. Taking into account the work that had been developed in the preparation of the FNC and experience acquired, it is assumed that all the reports and studies to be prepared under this project will be completed as soon as possible with the highest quality possible, with the supervision of the General Coordination on Global Climate Change of the Ministry of Science and Technology, responsible for the technical implementation of the project, as well as for monitoring and evaluation activities.

77. See Logical Framework of the project.

*Expected global, national and local benefits*

78. The main national and local benefits of this Enabling Activity project will be to strength capacity, strength methodologies and improve data gathering. Furthermore, it will provide financial resources for the development of activities related to climate change which would not be possible without this project.

79. At global level, Brazil's Second National Communication can increase knowledge of some issues related to climate change, such as the assessment of emissions by sources and removal by sinks from land use, land use change and forestry sector; carbon soils; methane from hydroelectric reservoirs and other areas where there is innovative research in the country (like savannah burning).

*Country Ownership: Country Eligibility and Country Drivenness*

80. Brazil was the first signatory Party to the UNFCCC. The Convention was signed by Brazil on June 4<sup>th</sup>, 1992 and ratified by Congress, in accordance with the National Constitution, by means of the Decree no.1 of February 28<sup>th</sup>, 1994. The Convention entered into force for Brazil on May 29<sup>th</sup>, 1994, 90 days after its ratification by the National Congress.

81. Developing country Parties have committed themselves to providing the UNFCCC with adequate information on the status of implementation of such obligations, as called for under Article 12.1. National communications are required to include an inventory of net anthropogenic emissions of GHGs not included in the Montreal Protocol, and a general description of the steps taken or envisaged to implement the Convention.

82. According to Article 4.3, "the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1".

83. The project has been endorsed by the Brazilian Government in a letter dated September 5<sup>th</sup> 2003 – see letter attached (see Section IV).

### *Sustainability*

84. The Climate Change Program included in the Multiannual Plan - PPA is a sign that the Brazilian Government is concerned with climate change. Nevertheless, the budget is still too limited, considering that the Government cannot override national priorities, especially regarding social development.

85. A second phase of the Climate Change Program under PPA started in 2004 and will be completed in 2007. The resources provided by the PPA will be complementary in nature and will enable Brazil to continue its efforts towards the implementation of the Convention, allowing for the continued implementation of some activities financed by the federal budget under the co-ordination of MCT, and especially keeping the climate change office operational. It is expected that this Program be held in continuous basis, and that, gradually, in the future, the costs of the UNFCCC implementation in the country be fully incorporated into the national budget.

86. As the project design draws from over 5 years of successful partnerships of the Brazilian Government with UNDP technical cooperation projects, which provided renowned experiences in climate change activities in the country, specially the preparation of the First National Communication, there is strong indication of the technical and financial sustainability of the project. Moreover, because of the broad consultation processes among government, academic institutions, private sector and civil society organizations, throughout the period of preparation of Brazil's First National Communication, this project ensures the input of state-of-the-art expertise and consensus to design project interventions, further underscoring technical sustainability. This strategy will be maintained and enlarged for the SNC. The comprehensive involvement of stakeholders The comprehensive involvement of stakeholders, in a decentralized process, will be sought and this high level of participation in consultations on project design also indicate the strong social sustainability of the proposal.

87. Strategic partnerships among stakeholders in many sectors guarantees the compliance of project proponents with the principle of participatory planning and execution arrangements, necessary for the sustainability of a long-term climate change strategy, based on the future implementation of CDM projects in the country. It should be noted that CDM activities will not be funded by GEF under this project.

88. Some institutions that worked in the preparation of the FNC have already allocated some human and financial for the development of climate change related activities. With the enlargement of the number of institutions involved in this SNC, it is expected more capacity building (including staff trained) and the enhancement of research on climate change in Brazil, particularly in areas where few researchers have been working. It is expected institutional strengthening not only of governmental institutions, but of all stakeholders involved in the preparation of the SNC.

89. From the point of view of environmental sustainability, the results of the project, especially regarding inventory and vulnerability and adaptation assessment, will provide methodological references that will be important for the formulation of future CDM and adaptation projects, as well as important inputs for the scientific literature assessment review periodically undertaken by IPCC.

### *Replicability*

90. The publication of Brazilian emissions, which are proportional to the size of the economy of the country, its vast territorial expanse, and its large population, in a transparent way and with scientific emphasis, is important for the global climate change assessment.

91. Moreover, it has always been clear that the composition of the total Brazilian emissions would be different from those of most developed countries, where the emissions from fossil fuel combustion represent a major share of GHG emissions. This is due to the low fossil fuel share of the Brazilian energy sector, the large extent of agricultural activities and the increase in deforestation rates in recent years.

92. Therefore, when taking into account the great area of the country and its regional diversities, in order to produce emission estimates with a sufficient level of accuracy, ample local research should be conducted. At the same time, even for sectors such as agriculture, where an extensive research program is normally carried out, climate change is a new issue, requiring all new research directions.

93. The general strategy was to use available information and, at the same time, put in place research programs to improve the knowledge of the problem and the data at hand. These programs are usually composed of several phases, in order to provide better quality information at intermediate points. The idea is to have a permanent research program in place involving as many research institutes, universities and sectoral associations as possible.

94. For instance, because of the importance of the *forest and grassland conversion and abandonment of managed lands* sector in the overall Brazilian emissions and the unreliability of default and international data, a large local project has been established. The methodology is based on the analysis of satellite images, allowing assessing the amount of annual deforested or left to regrow areas. The results obtained are reliable but together with the area converted it is necessary to estimate the biomass content. These data are extremely variable for different regions and even for different parts of the Amazonian forest. It is expected that the SNC could enhance and extend the studies on activity data and emission factors related to sectors that involve a high degree of uncertainty, considering the lack of emission factors and/or activity data (savanna burning, waste, soil carbon emissions and, planted forests emissions/uptake), which will facilitate inventory preparation and ensure more reliable results in the future.

Moreover, the studies being undertaken in Brazil to estimate methane emissions from hydroelectric power plants reservoirs and savanna burning are pioneer in the world and could enhance future methodology development. Other countries will profit from emission factors developed by the Brazilian SNC regarding renewable energy, such as alcohol, charcoal and biodiesel use.

95. In addition, the expected output regarding the development of a regional climate change model by the CPTEC could enhance knowledge on this area. CPTEC has developed a regional climate model (Eta/CPTEC) that can be applied easily to South America to generate detailed climate predictions, including climate change. Regional climate models have a much higher resolution than the global climate model and, as a result, provide climate information with useful local details, including realistic predictions of extreme events. Predictions using regional climate models will thus lead to a substantial improvement in the assessments of Brazil's vulnerability to climate change and how the country can adapt to it.

### **PART III : Management Arrangements**

96. The project is proposed by the Ministry of Science and Technology (MCT), through its General Coordination on Global Climate Change, which has been responsible since 1994 for the coordination of the implementation in the country of commitments resulting from the UNFCCC and related actions at the federal level. Furthermore, the Minister of Science and Technology is the President of the Interministerial Commission on Climate Change, created by the presidential decree of July 7<sup>th</sup>, 1999, for the purpose of coordinating the actions of the government in this area. MCT is also the Executive Secretary of the Commission and provides technical and administrative support to its work.

97. As mentioned above, the preparation of national communications is a continuing process. Therefore, the second national communication will be built upon the lessons learnt from the first one.

98. Given the size and complexity of the project, the General Coordination on Global Climate Change of the Ministry of Science and Technology, responsible for the technical implementation of the project, will also be in charge of coordinating the activities that will be developed under the project.

99. Partnerships will be encouraged and enhanced with decentralized actions and the involvement of key partners, which are indispensable to the implementation of the program. The basic proposal for such implementation consists of the maintenance and strengthening of existing partnerships, increasing the effective capacity of the institutions with regard to climate change, and the establishment of new partnerships, especially in new areas not covered in the FNC.

100. Regarding Output 1.1.1 (Inventory for the Energy Sector) of the first Outcome (Inventory Improvement and Extension Carried Out) under Objective 1 (Preparation of National Inventory Refinement), research centers will be involved. It is expected that the Graduate Programs in Engineering of the Federal University of Rio de Janeiro - COPPE/UFRJ will carry out the top-down approach and the institution E&E (Economy and Energy) will carry out the bottom-up approach. Also, Petrobras and the National Union of the Coal Extraction Industry – SNIEC plan to estimate the fugitive emissions for this sector.

101. Regarding Output 1.1.2 (Inventory for the Industry Sector), the estimation of anthropogenic GHG emissions from industrial production processes, in addition to the emissions from fuel combustion that will be reported in the studies addressing the energy sector, will be the product of several sectoral projects carried out by groups and consultants, under the supervision of the General Coordination on Global Change of the MCT, as done in the FNC. Data was provided by sectoral associations specialized in the industry sector: National Cement Industries Association (SNIC) on cement; Brazilian Association of Lime Producers (ABPC), complemented by information from the Mineral Summary of the Ministry of Mines and Energy (DNPM, 1995 and 1997), on lime production; Brazilian Chemical Industry Association (ABIQUIM) on the production of ammonia, nitric acid, adipic acid, and barilla; Brazilian Aluminum Association (ABAL) on aluminum; Brazilian Pulp and Paper Association (BRACELPA) on pulp and paper; Brazilian Beverages Association (ABRABE), Brazilian Food Industry Association (ABIA) and Brazilian Wine and Grape Growers Union (UBIBRA) on food and beverage; and others. The improvement of activity data for the SNC will be achieved through the application of forms (including information on production processes, technology used, and maintenance procedures) to sectoral associations as well as independent producers in some selected sub-sectors. Consultation of official statistics and literature review will also be utilized to support the estimation of gas emissions from industrial activities.

102. Regarding Output 1.1.3 (Inventory for the Agricultural Sector), data collection and information analysis from the agricultural sector, based on the experience of the FNC, will be coordinated by the Brazilian Agricultural Research Corporation (EMBRAPA), which has put in place a research program in climate change issues. For the SNC, EMBRAPA, through its Environment unit, EMBRAPA Environment (EMBRAPA Meio Ambiente, in Jaguariúna, São Paulo), will be the institution responsible for the major part of the activities related

to the agricultural sector. With this aim, a collaborative network with partner companies (EMBRAPA Dairy Cattle, EMBRAPA Beef Cattle, Southeast EMBRAPA Livestock, EMBRAPA Pantanal, EMBRAPA Goats, EMBRAPA Swine and Poultry, EMBRAPA Soils, EMBRAPA East Amazonia, EMBRAPA Soybean, EMBRAPA Rice and Bean, EMBRAPA Cerrados, EMBRAPA Agrobiologia, and other Centers of EMBRAPA) and collaborating institutions (Animal Science Institute; sugar cane technology companies; Epagri; Epamig; Integral Technical Assistance Coordination - CATI; Riograndense Rice Institute – IRGA; Vale do Paraíba Regional Center for Technological Development; Federal universities, such as the Federal University of Rio Grande do Sul – UFRGS; and State universities, such as State University Julio de Mesquita Filho - UNESP-Campus de Jaboticabal, SP; USP-Pirassununga, SP; UNESP – Campus de Jaboticabal, SP; USP-ESALQ-Piracicaba, SP, will be carried out in order to update these information and correct the gaps of the former inventory. The National Institute for Space Research - INPE will provide satellite images needed for the study related to savanna burning and Funcate will provide the digital processing of the images and relevant data.

103. Regarding Output 1.1.4 (Inventory for the Land-Use Change and Forestry Sector) – one of the most important in our research program due to its importance in the Brazilian emissions inventory – several institutions will be involved. Based on the experience of the FNC, it is expected that the Foundation for Science, Technology and Space Applications – Funcate, will be in charge of improving the assessment of emissions for the forest and grassland conversion sector, as well as for the changes in forest and other woody biomass stocks sector. In the SNC, this assessment will be based on the full evaluation of all satellite images through digital processing. This technology will also help estimations related to planted forests, which will be carried out by the Brazilian Sustainable Development Foundation – FBDS. To improve activity data and the assessment of the CO<sub>2</sub> emissions and removals from soils sectors, the Center for Nuclear Energy in Agriculture - CENA of the University of São Paulo - USP, will conduct a new research on the carbon content of soils for Brazilian types of soils under different types of vegetation cover and climate conditions, as well as the country specific factor for the soil carbon content change after a land-use change. For the FNC, a pioneer study undertaken on methane emissions from reservoirs was coordinated by COPPE and ELETROBRAS, and this partnership will be reproduced in the SNC to establish a methodology for accounting for the greenhouse gases from different Brazilian hydroelectric reservoirs. The National Institute for Space Research - INPE will provide satellite images needed for the studies related to this Output, which will represent the main source of co-financing for this project from the Brazilian Federal Government.

104. Regarding Output 1.1.5 (Inventory for the Waste Sector), as in the FNC, the activities in the SNC will be coordinated by the Environment Sanitation Agency of the State of São Paulo – CETESB, working together with the Brazilian Institute for Geography and Statistics, which undertook in 1989 and 2000 the National Basic Sanitation Survey, in order to improve data gathering. In addition, regional research projects will be conducted together with local institutions, to collect local and regional data.

105. Regarding Outcome 1.2 (Strengthening of the National Structure Established for the Estimation of Greenhouse Gas Emissions) of Objective 1 (Preparation of National Inventory Refinement), the establishment of quality control and quality assurance procedures (Output 1.2.1), as well as the establishment of a database for activity data and emissions factors (Output 1.2.2), will be coordinated directly by the Ministry of Science and Technology (MCT), through its General Coordination on Global Change. The MCT will make efforts towards maintaining all sectoral inventories and QA/QC documentation for every inventory produced and develops an easily accessible public database on GHG emission factors with supporting scientific information from Brazil.

106. Regarding Outcome 2.1 (Regional Modeling of Climate and Climate Change Scenarios Elaborated) of Objective 2 (Methodological Approach regarding Vulnerability Assessment and Adaptation Measures Elaborated) and related Outputs, the institution in charge will be the Center for Weather Forecasting and Climate Studies - CPTEC linked to the National Institute for Space Research - INPE, which has developed capacity in climate modeling, at global and regional levels, currently used for weather and seasonal climate forecasts. CPTEC has also developed a regional climate model (Eta/CPTEC) that can be easily applied to South America to generate detailed climate predictions, including for climate change. The development and analysis of climate-

change scenarios for Brazil can only be carried out making use of the new supercomputer being installed at CPTEC.

107. Regarding Outcome 2.2 (Vulnerability and Adaptation Research and Studies Concerning Strategic Sectors that are Vulnerable to the Impacts Associated with Climate Change in Brazil Carried Out) of Objective 2, many institutions will be involved depending on the area in which the vulnerability and adaptation assessment will be carried out. Regarding the health sector (Output 2.2.1), the involvement of the Oswaldo Cruz Foundation, which has some research experience in this area, is important. Regarding the energy sector (Output 2.2.2) and water resources, floods and desertification (Output 2.2.3), the implementation of the project will promote a partnership between the institutions that might be involved in such activities (Electrical Energy Agency - ANEEL and National Water Agency - ANA) in order to keep coherence and complementariness of the studies. Regarding the agriculture sector (Output 2.2.4), the Brazilian Agricultural Research Corporation (EMBRAPA) and its centers, coordinated by the Environment unit, Embrapa Environment (EMBRAPA Meio Ambiente, in Jaguariúna, São Paulo), will carry out the activity envisaged. Regarding the V&A assessment in the coastal zone management (Output 2.2.5), research institutions linked to federal universities (yet to be identified, but there have been some preliminary contacts with the Federal University of Rio de Janeiro) will be in charge of analyzing the overall sea level rise in Brazil as a consequence of climate change. For the activity envisaged under Output 2.2.6 (Report on Vulnerability and Biodiversity elaborated), which is related to the evaluation of the effects of the rise of sea water temperatures on the coral's photo symbiotic organisms (coral bleaching), the Federal University of Bahia – UFBA and the Federal University of Paraná – UFPR will be the institutions in charge. Output 2.2.7 aims at establishing a Coordination between the elaboration of the Regional Modeling of Climate and Climate Change Scenarios (Outcome 2.1) and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil (Outcome 2.2), as well as related to the inventory of greenhouse gas emissions and removals (Outcome 1.1).

108. Regarding Objective 3 (Description of the Brazilian National Circumstances and the Steps Taken or Envisaged to Implement the Convention) and related outputs, all the reports will be the product of several studies carried out by consultants, under the supervision of the Global Change Coordination Office of the MCT, as done in the FNC. The same is applicable for the Objective 4 (Public Awareness and Education Strategy in place) and related outcome, considering that the publication of documents and reports will be coordinated by the General Coordination on Global Climate Change Office of the MCT and that updated information concerning climate change issues, as well as the updated national GHG inventory results, will be made available in the web site of the Ministry of Science and Technology. Regarding Objective 5 (Preparation of the Second National Communication), the General Coordination on Global Climate Change Office of the MCT will also be in charge of the related outcome.

109. The resources will be administrated by the MCT through the UNDP office in Brazil. The executing agency will perform an internal control of all payments made; a control that will be monitored by the Brazilian Cooperation Agency – ABC and UNDP.

110. In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF. The UNDP logo should be more prominent and separated a bit from the GEF logo if possible as, with non-UN logos, there can be security issues for staff.

#### **PART IV: Monitoring and Evaluation Plan and Budget**

111. The General Coordination on Global Change at the Ministry of Science and Technology, responsible for the technical implementation of the project, will be in charge of monitoring and evaluation activities.

112. The organizations that will be contracted by the Ministry of Science and Technology will have a contractual clause stating that they shall present partial reports every 3 months, which will be assessed by the “country-team” that might ask for more detailed information or corrections. The partial reports might be available on the Internet, ensuring the transparency of the process.

113. In addition, project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF.

114. For additional information, see M&E Plan and Budget for FSP (Annex I).

## **SECTION II : STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT**

### **PART I: Incremental Cost Analysis**

Not applicable for this project.

#### **A. PROJECT BACKGROUND**

#### **B. INCREMENTAL COST AS SESSMENT (ALSO REFER TO ANNEX A IC MATRIX IN EXEC SUMMARY)**

**Baseline**

**Global Environmental Objective**

**Alternative**

**Systems Boundary**

**Summary of Costs**

**PART II : Logical Frame work Analysis (Refer to Annex B of Executive Summary)**

**Table 2: Indicative Outputs, Activities and quarterly workplan<sup>1</sup>**

	Activities	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
<b>OUTCOME 1.1: INVENTORY IMPROVEMENT AND EXTENSION CARRIED OUT</b>													
Output 1.1.1 Inventory for the Energy Sector elaborated	Activity 1.1.1.1 – Assess and improve the Energy Balance Information	X	X	X	X	X	X						
	Activity 1.1.1.2 - Improve and extend the Bottom-Up approach for GHG emissions estimation		X	X	X	X	X	X					
	Activity 1.1.1.3 - Improve knowledge of Brazilian specific energy transformation sectors, including characteristics of product flows and GHG emission in the different phases			X	X	X	X	X	X	X	X		
	Activity 1.1.1.4 - Improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach		X	X	X	X	X						
	Activity 1.1.1.5 - Improve methodology and obtain and extend data for estimating fugitive emissions								X	X	X	X	
Output 1.1.2 Inventory for the Industry Sector elaborated	Activity 1.1.2.1 - Improve the assessment for the Cement Production Sector		X	X	X	X	X						
	Activity 1.1.2.2 - Improve activity data and assessment for Lime Production, Limestone and Dolomite Use Sectors			X	X	X	X	X					
	Activity 1.1.2.3 - Improve activity data and assessment of Iron and Steel Industry Sector			X	X	X	X	X					
	Activity 1.1.2.4 - Improve activity data and assessment of Chemical Industry Sector			X	X	X	X	X					

	<b>Activities</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>	<b>Q12</b>
	Activity 1.1.2.5 - Improve activity data and assessment of the Production and Consumption of HFCs, PFCs and SF6 Sector		X	X	X	X							
Output 1.1.3 Inventory for the Agricultural Sector elaborated	Activity 1.1.3.1 - Improve country specific emission factors for Livestock Enteric Fermentation and Manure Management Sectors		X	X	X	X	X	X	X	X	X		
	Activity 1.1.3.2 - Improve the assessment of N <sub>2</sub> O emissions from Agricultural Soils		X	X	X	X	X	X					
	Activity 1.1.3.3 - Develop country specific emission factors for Rice Cultivation and improve and extend activity data		X	X	X	X	X	X	X	X	X		
	Activity 1.1.3.4 - Improve the assessment of CO, CH <sub>4</sub> , N <sub>2</sub> O and NO <sub>x</sub> emissions from agricultural residues burning		X	X	X	X	X	X					
	Activity 1.1.3.5 - Improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas		X	X	X	X	X	X					
Output 1.1.4 Inventory for the Land-Use Change and Forestry Sector elaborated	Activity 1.1.4.1 - Improve the assessment of emissions for the Forest and Grassland Conversion sector		X	X	X	X	X	X	X	X	X	X	
	Activity 1.1.4.2 - Improve the assessment of emissions for the Changes in Forest and Other Woody Biomass Stocks sector		X	X	X	X	X	X	X	X	X	X	
	Activity 1.1.4.3 - Improve activity data and the assessment of emissions of the CO <sub>2</sub> Emissions and Removals from Soils sector		X	X	X	X	X	X	X	X			
	Activity 1.1.4.4 - Methane Emissions from Water Reservoirs		X	X	X	X	X	X	X	X	X		
Output 1.1.5 Inventory for the Waste Sector elaborated	Activity 1.1.5.1 - Improve data and extend estimates for Solid Waste Disposal sector		X	X	X	X	X	X	X				
	Activity 1.1.5.2 - Improve data and extend estimates for Wastewater Handling sector		X	X	X	X	X	X	X				
	Activity 1.1.5.3 - Estimate the GHG emissions from Waste Incineration sector		X	X	X	X	X	X	X				

	<b>Activities</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>	<b>Q12</b>
<b>OUTCOME 1.2: STRENGTHENING OF THE NATIONAL STRUCTURE ESTABLISHED FOR THE ESTIMATION OF GREENHOUSE GAS EMISSIONS</b>													
Output 1.2.1 Establish Quality Control and Quality Assurance Procedures	Activity 1.2.1.1 - Develop and Implement a Quality Control Pilot Plan	X	X	X	X	X	X	X	X	X	X	X	
	Activity 1.2.2.2 - Develop and Implement Quality Assurance Procedures	X	X	X	X	X	X	X	X	X	X	X	
Output 1.2.2 Establish a Database for Activity Data and Emission Factors	Activity 1.2.2.1 - Develop a Database for storing activity data and emission factors, keeping track of methodology and assumptions underlined in their establishment	X	X	X	X	X	X	X	X	X	X	X	
<b>OUTCOME 2.1: REGIONAL MODELING OF CLIMATE AND CLIMATE CHANGE SCENARIOS ELABORATED</b>													
Output 2.1.1 Analyze climate change scenarios for South America based on global climate change models from the IPCC-Data Distribution Center (IPCC-DDC) for different SRES scenarios (provided by the IPCC – DDC)	Activity 2.1.1.1 - Collect and analyze data	X	X	X	X	X	X	X	X	X	X	X	

	<b>Activities</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>	<b>Q12</b>
Output 2.1.2 Develop and improve the regional Eta/CPTEC model	Activity 2.1.2.1 – Develop and improve model	X	X	X	X	X	X	X	X	X	X	X	
Output 2.1.3 Develop and analyze climate-change downscaled scenarios for Brazil, making use of the new super computer being installed at CPTEC	Activity 2.1.3.1 – Develop and analyze downscaled scenarios	X	X	X	X	X	X	X	X	X	X	X	
Output 2.1.4 Enable the specialists of the CPTEC/INPE (National Institute for Space Research) to develop capacity for climate modeling on longer time scales, and to develop capacity building in V&A	Activity 2.1.4.1 – Enable specialists capacity building	X	X	X	X	X	X	X	X	X	X	X	
<b>OUTCOME 2.2: VULNERABILITY AND ADAPTATION RESEARCH AND STUDIES CONCERNING STRATEGIC SECTORS THAT ARE VULNERABLE TO THE IMPACTS ASSOCIATED WITH CLIMATE CHANGE IN BRAZIL CARRIED OUT</b>													

	<b>Activities</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>	<b>Q12</b>
Output 2.2.1 Report on Vulnerability and Adaptation in the Health Sector elaborated	Activity 2.2.1.1 - Study the vulnerability to climate related diseases (such as Malaria, Leishmaniasis and Cholera) and Adaptation Measures		X	X	X	X	X	X	X				
Output 2.2.2 Report on Vulnerability and Adaptation in the Energy Sector elaborated	Activity 2.2.2.1 - Evaluate the vulnerability of the power sector and possible adaptation measures		X	X	X	X	X	X	X	X	X	X	
Output 2.2.3 Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification elaborated	Activity 2.2.3.1 - Estimate the biophysical impacts of climate change on hydrologic resources in terms of water quantity (annual and seasonal distribution)		X	X	X	X	X	X	X	X	X	X	
Output 2.2.4 Report on Vulnerability and Adaptation in the Agriculture elaborated	Activity 2.2.4.1 - Study of the possible effects of climate change on the Brazilian agricultural sector		X	X	X	X	X	X	X				
Output 2.2.5 Report on Vulnerability and Adaptation in the Coastal Zone Management elaborated	Activity 2.2.5.1 - Analyze the overall sea level rise in Brazil as a consequence of climate change		X	X	X	X	X	X	X				
Output 2.2.6 Report on Vulnerability and Biodiversity elaborated	Activity 2.2.6.1 - Analyze the climate change effects on selected biodiversity aspects in Brazil		X	X	X	X	X	X	X				

Output 2.2.7 – Establish a Coordination between the elaboration of the Regional Modeling of Climate and Climate Change Scenarios and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil	Activity 2.2.7.1 Establish a Coordination unit between the preliminary results related to the elaboration of the Regional Modeling of Climate and Climate Change Scenarios (Outcome 2.1) and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil (Outcome 2.1), as well as related to the inventory of greenhouse gas emissions and removals (Outcome 1.1)		X	X	X	X	X	X	X	X	X	X	
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	Activities	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
<b>OUTCOME 3.1: DESCRIPTION OF NATIONAL CIRCUMSTANCES AND THE STEPS TAKEN OR ENVISAGED TO IMPLEMENT THE CONVENTION PREPARED</b>													
Output 3.1.1 Elaborate a report on National Circumstances	Activity 3.1.1.1 - Elaborate a report about the National and Regional Development Priorities				X	X	X	X	X	X	X	X	
	Activity 3.1.1.2 - Elaborate a report about Existing Institutional Arrangements Relevant to the Preparation of the Inventory on a Continuing Basis and Develop Indicators to Assess the Sustainability of the National Communication Process in the Country, including capacity building.				X	X	X	X	X	X	X	X	
	Activity 3.1.1.3 - Elaborate a report about Special Circumstances, including the Special Needs and Concerns Arising from the Adverse Effects of Climate Change and/or of the Implementation of Response Measures				X	X	X	X	X	X	X	X	

Output 3.2.1 Describe the Steps Taken or Envisaged to Implement the Convention in Brazil	Activity 3.2.1.1 - Describe programs containing measures to mitigate climate change implemented or been elaborated in Brazil. This activity will build on a baseline activity financed by the Government of Brazil whereby, based on available information, national programmes and actions to mitigate climate change are prioritized and subject to monitoring and reporting at national level. The national mitigation strategy relies mainly in designing and developing CDM project activities. Registered projects will be assessed and reported. It should be noted that CDM activities will not be funded by GEF.	X	X	X	X	X	X	X	X	X	X	X	
	Activity 3.2.1.2 - Describe programs implemented or been elaborated in Brazil containing measures to facilitate adequate adaptation to climate change	X	X	X	X	X	X	X	X	X	X	X	
	Activity 3.2.1.3 - Describe other information considered relevant to the achievement of the objective of the Convention in Brazil, regarding transfer of technologies; research and systematic observation; . education, training and public awareness; capacity building activities and, information and networking related to climate change	X	X	X	X	X	X	X	X	X	X	X	
	Activity 3.2.1.4 - Describe constraints and gaps, and related financial, technical and capacity needs in Brazil	X	X	X	X	X	X	X	X	X	X	X	

	<b>Activities</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>	<b>Q12</b>
<b>OUTCOME 4.1. PUBLIC AWARENESS AND EDUCATION STRATEGY IN PLACE</b>													
Output 4.1.1 Publish documents and reports related to the issue elaborated especially by the IPCC, the UNFCCC Secretariat and also by the project itself and by other relevant institution	Activity 4.1.1.1 – Publish relevant documents and reports	X	X	X	X	X	X	X	X	X	X	X	
Output 4.1.2 Make available in the web site of the Ministry of Science and Technology with updated information concerning climate change issues, as well as the updated national GHG inventory	Activity 4.1.2.1 – Post in the web site of MCT updated information	X	X	X	X	X	X	X	X	X	X	X	X
<b>OUTCOME 5.1. PUBLISH BRAZILIAN SECOND NATIONAL COMMUNICATION</b>													
Output 5.1.1: Brazilian Second National Communication translated, edited and published in English and Portuguese.	Activity 5.1.1.1 – Edit, translate and publish the Second National Communication											X	X

## SECTION III : Total Budget and Workplan

**Award :**

**Award Title : 2613/CC/EA/Second National Communication of Brazil**

**Project ID :**

**Project Objective (Atlas Output/Project): Second National Communication of Brazil to the UNFCCC**

Project Outcomes /Atlas Activity	Responsible Party	Source of Funds	PLANNED BUDGET & WORKPLAN						
			ERP/Atlas Budget Code	ERP/Atlas Budget Description	2005 US\$	2006 US\$	2007 US\$	Total Amount	
<b>Outcome 1</b> <i>Inventory Improvement and Enhancement Extension</i>	MCT	GEF	71600	Duty Travel	50,000	64,000	74,000	178,000	
			71300	National Consultants	110,000	90,000	100,000	260,000	
			71400	Contractual Services –Individual	320,000	355,000	570,000	1,193,000	
			INPE	72100	Contractual Services-Individual	500,000	1,000,000	1,000,000	2,500,000
			MCT	72100	Contractual Services-Individual	500,000	675,600	500,000	1,675,600
				72300	Materials and Goods	15,000	15,000	15,000	45,000
				72200	Equipment and Furniture	100,000	50,000	20,000	170,000
		74500	Miscellaneous Expenses	10,000	15,000	15,000	40,000		
				<b>TOTAL OUTCOME COST</b>	<b>1,605,000</b>	<b>2,264,600</b>	<b>2,294,000</b>	<b>6,163,600</b>	
<b>Outcome 2</b> <i>Establishment of National Structure for Estimation of Greenhouse Gases</i>	MCT	GEF	71300	National Consultants	20,000	20,000	20,000	60,000	
			72100	Contractual Services-Companies	25,000	25,000	40,000	90,000	
				<b>TOTAL OUTCOME COST</b>	<b>45,000</b>	<b>45,000</b>	<b>60,000</b>	<b>150,000</b>	
<b>Outcome 3</b> <i>Regional Modeling of Climate and Climate Change Scenarios</i>	MCT	GEF	71200	International Consultants	0	10,000	10,000	20,000	
			71600	Duty Travel	15,000	20,000	25,000	60,000	
			71300	National Consultants	20,000	30,000	50,000	100,000	
			72100	Contractual Services-Companies	65,000	45,000	75,000	185,000	
			72300	Materials and Goods	5,000	5,000	5,000	15,000	
			72200	Equipment and Furniture	30,000	10,000	0	40,000	
				<b>TOTAL OUTCOME COST</b>	<b>135,000</b>	<b>120,000</b>	<b>165,000</b>	<b>420,000</b>	
<b>Outcome 4</b> <i>Vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil</i>	MCT	GEF	71600	Duty Travel	10,000	20,000	30,000	60,000	
			71300	National Consultants	30,000	45,000	60,000	135,000	
			72100	Contractual Services-Companies	45,000	55,000	80,000	180,000	
			72300	Materials and Goods	5,000	5,000	5,000	15,000	
			72200	Equipment and Furniture	35,000	10,000	5,000	50,000	

				<b>TOTAL OUTCOME COST</b>	125,000	135,000	180,000	440,000	
<b>Outcome 5</b> <i>National Circumstances and Steps Taken or Envisaged to Implement the Convention</i>	MCT	GEF	71600	Duty Travel	5,000	5,000	10,000	20,000	
			71300	National Consultants	24,000	24,000	32,000	80,000	
				<b>TOTAL OUTCOME COST</b>	29,000	29,000	42,000	100,000	
<b>Outcome 6</b> <i>Public Awareness and Education</i>	MCT	GEF	71600	Duty Travel	0	5,000	5,000	10,000	
			71300	National Consultants	19,000	19,000	32,000	70,000	
			72300	Materials and Goods	0	5,000	5,000	10,000	
			72200	Equipment and Furniture	10,000	0	0	10,000	
				<b>TOTAL OUTCOME COST</b>	29,000	29,000	42,000	100,000	
<b>Outcome 7</b> <i>Preparation of the Second National Communication</i>	MCT	GEF	71300	National Consultants	0	0	10,000	10,000	
			74500	Miscellaneous Expenses	0	0	90,000	90,000	
				<b>TOTAL OUTCOME COST</b>	0	0	100,000	100,000	
<b>Outcome 8</b> <i>Monitoring and Reporting</i>	MCT	GEF	71300	National Consultants	10,000	40,000	30,000	80,000	
			71600	Mission Costs	10,000	6,000	6,000	22,000	
				<b>TOTAL OUTCOME COST</b>	20,000	46,000	36,000	102,000	
<b>TOTAL by Source of Fund/Donor</b>					<b>GEF</b>	988,000.00	993,000.00	1,419,000.00	3,400,000.00
					<b>Other INPE</b>	500,000.00	1,000,000.00	1,000,000.00	2,500,000.00
					<b>Other MCT</b>	500,000.00	675,600.00	500,000.00	1,675,600.00
<b>GRAND TOTAL</b>						1,988,000.00	2,668,600.00	2,919,000.00	7,575,600.00

**Notes:**

1. Project Outcomes should match the logical framework
2. 2004 US \$ = provide total cost by outcome, and by donor, for one calendar year
3. The Annual WorkPlans (AWP) will be generated by UNDP Country Office (through ATLAS) after project final approval and Delegation of Authority, and prior to Project Document Signature, on the basis of information provided in this table. The AWP will be reviewed and approved at the first Inception Workshop.

<b>GEF Resources per Objectives, outcomes and outputs</b>	<i>Estimated Financing (USD)</i>
<b>Objective 1: National Inventory Refinement</b>	
<i>Outcome 1.1: Inventory Improvement and Enhancement Extension</i>	1,988,000
Output 1.1.1 Inventory for the Energy Sector	150,000
Output 1.1.2 Inventory for the Industry Sector	100,000
Output 1.1.3 Inventory for the Agricultural Sector	450,000
Output 1.1.4 Inventory for the Land-Use Change and Forestry Sector	1,138,000
Output 1.1.5 Inventory for the Waste Sector	150,000
<i>Outcome 1.2: Establishment of National Structure for Estimation of Greenhouse Gases</i>	150,000
Output 1.2.1 Establish a Quality Assurance and Control Procedure	50,000
Output 1.2.2 Establish a Database for Activity Data and Emission Factors	100,000
<b>Subtotal Objective 1</b>	<b>2,138,000</b>
<b>Objective 2: Methodological Approach Regarding Vulnerability Assessment and Adaptation Measures</b>	
<i>Outcome 2.1: Regional Modeling of Climate and Climate Change Scenarios</i>	420,000
Output 2.1.1: Analyze climate change scenarios for South America based on global climate change models from the IPCC-Data Distribution Center (IPCC-DDC) for different SRED scenarios	130,000
Output 2.1.2: Develop and improve the regional Eta/CPTEC model	60,000
Output 2.1.3: Develop and analyze climate-change downscaled scenarios for Brazil, making use of the new supercomputer being installed at CPTEC	100,000
Output 2.1.4: Enable the specialists of the CPTEC/INPE to develop capacity for climate modeling on longer time scales, and to develop capacity building in V&A at national and regional levels	130,000
<i>Outcome 2.2: Vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil</i>	440,000
Output 2.2.1 Study Vulnerability and Adaptation in the Health Sector	60,000
Output 2.2.2 Study Vulnerability and Adaptation in the Energy Sector	70,000
Output 2.2.3 Study Vulnerability and Adaptation related to Water Resources, Floods and Desertification	40,000
Output 2.2.4 Study Vulnerability and Adaptation in the Agriculture	70,000
Output 2.2.5 Study Vulnerability and Adaptation in the Coastal Zone Management	40,000

Output 2.2.6 Study Vulnerability and Biodiversity	20,000
Output 2.2.7 - Establish a Coordination between the elaboration of the Regional Modeling of Climate and Climate Change Scenarios and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil	140,000
<b>Subtotal Outcome 2</b>	<b>860,000</b>
<b>Outcome 3: National Circumstances and Steps Taken or Envisaged to Implement the Convention</b>	
Output 3.1: Elaborate a report on National Circumstances	30,000
Output 3.2: Describe the Steps Taken or Envisaged to Implement the Convention in Brazil	70,000
<b>Subtotal Outcome 3</b>	<b>100,000</b>
<b>Outcome 4: Public Awareness and Education</b>	
Output 4.1.1: Publish documents and reports related to the issue elaborated especially by the IPCC, the UNFCCC Secretariat and also by the project itself and by other relevant institution	70,000
Output 4.1.2: Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the national GHG inventory results in accordance with the initial national communication	30,000
<b>Subtotal Outcome 4</b>	<b>100,000</b>
<b>Outcome 5: Preparation of the Second National Communication</b>	
Output 5.1: Publish Brazilian Second National Communication in English and Portuguese and present it to the Interministerial Commission on Climate Change and GEF	100,000
<b>Subtotal Outcome 5</b>	<b>100,000</b>
<b>Monitoring and Evaluation</b>	
Monitoring and Evaluation	102,000
<b>Subtotal M&amp;E</b>	<b>102,000</b>
<b>TOTAL</b>	<b>3,400,000</b>

## SECTION IV : ADDITIONAL INFORMATION

### **PART I : Other agreements**

115. The project has been endorsed by the Brazilian Government in a letter dated September 5<sup>th</sup>, 2003 (see letter attached).

### **Legal Context**

This project document shall be the instrument envisaged in the Supplemental Provisions to the Project Document, attached as Annex 5 of this document. The host country implementing agency shall, for the purpose of the Supplemental Provisions to the Project Document, refer to the government co-operating agency described in the Supplemental Provisions.

UNDP acts in this Project as Implementing Agency of the Global Environment Facility (GEF), and all rights and privileges pertaining to UNDP as per the terms of the SBAA shall be extended mutatis mutandis to GEF.

The UNDP Resident Representative in Brazil is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- d) Inclusion of additional annexes and attachments only as set out here in this Project Document

## **PART II: Draft Terms of References for key project staff and main sub-contracts**

### **Terms of Reference No 01**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**1. Title :** Inventory for the Energy Sector – Top-down approach for GHG Emission Estimation

**2. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular with Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering of the Federal University of Rio de Janeiro (COPPE).

**3. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extent the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

#### **4. Description of activities, duties and responsibilities**

- .Assess and improve the Energy Balance Information.
- Obtain detailed data for carbon contents and low caloric values for fossil products consumed in Brazil. The Brazilian Energy Balance adopts high caloric values. In the FNC values have been converted to low caloric values using IPCC default factors. Also the carbon content adopted for each fuel was taken from the IPCC Guidelines. As characteristics of fuels in Brazil can differ from international average, country specific values should be obtained
- Update the Brazilian Useful Energy Balance (UEB) of 1993, including the use destinations of the Final Energy by fuel. The Bottom-Up approach needs detailed information about energy destination and technology. The last update of the UEB was conducted in 1993, building upon the 1983 version. As many structural changes have occurred in the recent years, the UEB should be updated. Improvements also should be incorporated, mainly in the coverage of technologies for fuel consumption.

**5. Expected Outputs:** Elaborate the Inventory for the Energy Sector – Energy Balance

#### **6. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the energy sector
- . Ability to aggregate other institutions and research centres
- . University degree

**7. Responsible to:** Coordinate the Inventory for the Energy Sector - Top-down approach for GHG Emission Estimation

**8. Place of Work:** To be defined

**9. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

#### **Terms of Reference No 02**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Energy Sector - Bottom-Up Approach for GHG Emissions Estimation

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to

meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1". In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil's First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extend the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

#### **04. Description of activities, duties and responsibilities**

- Improve and extend the Bottom-Up approach for GHG emissions estimation.
- Assess emission factors by technology for the key sources of CO<sub>2</sub> in the fossil combustion in stationary sources. In the First National Communication, for most sectors and combustion technologies, the IPCC default factors have been adopted. Furthermore, as the IPCC Guidelines do not suggest default factors for all sectors, many factors have been chosen by similarity. Country specific values should be sought, taking in consideration specific technologies adopted, age and operation conditions of the equipment. Key stationary categories to be assessed include the use of coking coal in the steel industry, the use of LPG in the residential sector and the use Fuel Oil in the industry sector.
- Seek to improve emission factors for Non-CO<sub>2</sub> gases in the fuel combustion assessing country specific combustion technologies and equipment. Key sectors include wood consumption in the residential sector, charcoal use in iron and steel industry, and bagasse combustion in the food and drinking industry.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Bottom-Up approach for GHG emissions estimation

#### **06. Professional Qualifications**

- . Technical capacity (technical staff)
  - . Experience in greenhouse gas inventory for the energy sector
  - . Ability to aggregate other institutions and research centres
  - . University degree
- 07. Responsible to:** Coordinate the Inventory for the Energy Sector - Bottom-Up Approach for GHG Emissions Estimation
  - 08. Place of Work:** To be defined
  - 09. Duration:** Equivalent to Project duration
  - 10. Salary Category:** To be defined
  - 11. Budget Line :** GEF

### Terms of Reference No 03

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Energy Sector – Ethanol Production Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extent the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities:**

- Improve knowledge of Brazilian specific energy transformation sectors, including characteristics of product flows and GHG emission in the different phases.
- Assess the ethanol production sector, including sugar-cane production, characteristics of industrial cycle, production and use of ethanol, bagasse, and other products, and estimation of emission factors during all industrial phases.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector – Ethanol Production Sector

**06. Professional Qualifications**

- Technical capacity (technical staff)
- Experience in greenhouse gas inventory for the energy sector
- Ability to aggregate other institutions and research centres
- University degree

**07. Responsible to:** Coordinate the Inventory for the Energy Sector - Ethanol Production Sector

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No 04**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Energy Sector – Charcoal Production Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework

Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extent the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities**

- Improve knowledge of Brazilian specific energy transformation sectors, including characteristics of product flows and GHG emission in the different phases.
- Assess the charcoal production sector, with estimation of GHG emission factors, in all phases of production and usage of charcoal in the iron industry.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector – Charcoal Production Sector

**06. Professional Qualifications**

- Technical capacity (technical staff)
- Experience in greenhouse gas inventory for the energy sector
- Ability to aggregate other institutions and research centres
- University degree

**07. Responsible to:** Coordinate the Inventory for the Energy Sector – Charcoal Production Sector

**08. Place of Work:** To be defined

- 09. **Duration:** Equivalent to Project duration
- 10. **Salary Category:** To be defined
- 11. **Budget Line :** GEF

## Terms of Reference No 05

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title .** Inventory for the Energy Sector - Electricity Generation Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extend the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities:**

· Improve knowledge of Brazilian specific energy transformation sectors, including characteristics of product flows and GHG emission in the different phases.

- Assess the electricity generation sector, including type and size of facilities, type of fuel, data on fuel consumption and electricity production and country specific GHG emission factors.
- 05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Electricity Generation Sector
  - 06. Professional Qualifications**
    - Technical capacity (technical staff)
    - Experience in greenhouse gas inventory for the energy sector
    - Ability to aggregate other institutions and research centres
    - University degree
  - 07. Responsible to:** Coordinate the Inventory for the Energy Sector - Electricity Generation Sector
  - 08. Place of Work:** To be defined
  - 09. Duration:** Equivalent to Project duration
  - 10. Salary Category:** To be defined
  - 11. Budget Line :** GEF

#### **Terms of Reference No 06**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

- 01. Title :** Inventory for the Energy Sector - Oil Refinery Sector
- 02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular with Brazilian Oil Company - Petrobras.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extend the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities**

- Improve knowledge of Brazilian specific energy transformation sectors, including characteristics of product flows and GHG emission in the different phases.
- Assess the oil refinery sector, with estimation of GHG emission in all industrial phases, including fugitive emissions.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Oil Refinery Sector

**06. Professional Qualifications**

- Technical capacity (technical staff)
- Experience in greenhouse gas inventory for the energy sector
- Ability to aggregate other institutions and research centres
- University degree

**07. Responsible to:** Coordinate the Inventory for the Energy Sector - Oil Refinery Sector

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No 07**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Energy Sector - Road Transportation Sector

**02. Background.** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the

implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extent the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities:**

- Improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach

- Reassess the methodology established for the evaluation of emissions from the road transportation sector. The study in the FNC faced the limiting factor of the lack of available official data. The principal difficulty was the scarcity of information on the national light vehicle fleet and the average distance traveled annually by these vehicles. The SNC will seek to improve those data and establish and update country specific emission factors, taking in consideration characteristics of fuels, fuel blends used and equipment evolution. Special attention should be given to the use of ethanol.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Road Transportation Sector

**05. Professional Qualifications :**

. Technical capacity (technical staff)

- . Experience in greenhouse gas inventory for the energy sector
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Energy Sector - Road Transportation Sector

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

### Terms of Reference No 08

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Energy Sector – Air Transportation Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extent the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities**

- Improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach
- Implement Tier 2 methodology for air transportation, based on flight data by type of airplane. In the FNC emissions were estimated from consumption of aviation kerosene in Brazil for domestic routes. A pilot study was undertaken using the detailed Tier 2 methodology based in statistics on landings and takeoffs by type of aircraft. Information for the year 1995 was used, as a methodological assessment, because information for previous years was not available. This methodology will be used in the SNC, although the difficulty in data gathering.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Air Transportation Sector

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the energy sector
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Energy Sector - Air Transportation Sector

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No 09**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Energy Sector - Estimating Fugitive Emissions from Oil and Gas Production and Processing

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular with Brazilian Oil Company - Petrobras.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extent the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities**

- Improve methodology and obtain and extend data for estimating fugitive emissions
- Reassess methodology and obtain data for estimating fugitive emissions from oil and gas production and processing. Uncertainty level of this sector is very high, considering the lack of information on leakages and flare at oil platforms. A systematic data gathering system is required to improve data on flare combustion and methane emissions in gas production facilities.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Estimating Fugitive Emissions from Oil and Gas Production and Processing

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the energy sector
- . Ability to aggregate other institutions and research centres
- . University degree

- 07. **Responsible to:** Coordinate the Inventory for the Energy Sector - Estimating Fugitive Emissions from Oil and Gas Production and Processing
- 08. **Place of Work:** To be defined
- 09. **Duration:** Equivalent to Project duration
- 10. **Salary Category:** To be defined
- 11. **Budget Line :** GEF

**Terms of Reference No 10**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

- 01. **Title :** Inventory for the Energy Sector - Estimate Fugitive Emissions from Gas Distribution
- 02. **Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extend the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities**

- Improve methodology and obtain and extend data for estimating fugitive emissions
- Estimate fugitive emissions from gas distribution. Distribution systems in cities are very old and assessment of leakage was unreliable. With new gas distribution systems been constructed, and old systems being overhauled, better information may be available, and will be sought.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Estimate Fugitive Emissions from Gas Distribution

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the energy sector
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Energy Sector - Estimate Fugitive Emissions from Gas Distribution

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No. 11**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Energy Sector - Emissions from Coal Mining

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations

under Article 12, paragraph 1". In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil's First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular with the Sindicato Nacional da Indústria de Extração Mineral (National Labor Union of Mineral Extraction Industry)- SNIEC.

**03. Related Results of Project Document:** Output 1.1.1 - Inventory for the Energy Sector elaborated (involving some activities: assess and improve the Energy Balance Information, improve and extent the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions).

**04. Description of activities, duties and responsibilities**

- Update and extend study for emissions from coal mining, verifying data for coal characteristics. The estimates in the FNC include fugitive emissions of methane from open pit and underground mines as well as CO<sub>2</sub> emissions from coal deposits and waste piles. Emissions are presented by state and for the entire country. Even if this study was quite extensive, better data for coal characteristics by mine should be sought.

**05. Expected Outputs:** Elaborate the Inventory for the Energy Sector - Emissions from Coal Mining

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the energy sector
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Energy Sector - Emissions from Coal Mining

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

## **Terms of Reference No 12**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Industry Sector – Cement Production Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular the National Cement Industry Association (SNIC).

**03. Related Results of Project Document:** Output 1.1.2 - Inventory for the Industry Sector elaborated (involving some activities: improve the assessment for the cement production sector, improve activity data and assessment for lime production, limestone and dolomite use sectors, improve activity data and assessment of iron and steel industry sector, improve activity data and assessment of chemical

industry sector, improve activity data **and assessment of the production and consumption of HFCs, PFCs and SF6 sector)**

**04. Description of activities, duties and responsibilities**

- Improve the assessment for the Cement Production Sector. Estimation of CO2 emissions in the FNC was based on the clinker production as recommended in the IPCC methodology when clinker content in cement is lower than the international standard value. That is the case in Brazil where composition of cement is rather variable and components other than clinker are important. Improvement of estimates are sought in the SNC, through the assessment of production of various cement types and their composition.

**05. Expected Outputs:** Elaborate the Inventory for the Industry Sector – Cement Production Sector.

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the cement production sector
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Industry Sector – Cement Production Sector

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No 13**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Industry Sector – Lime Production, Limestone and Dolomite Use Sectors

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has

completed its activities in December 2000 and Brazil's First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular the Brazilian Association of Lime Producers (ABPC).

**03. Related Results of Project Document:** Output 1.1.2 - Inventory for the Industry Sector elaborated (involving some activities: improve the assessment for the cement production sector, improve activity data and assessment for lime production, limestone and dolomite use sectors, improve activity data and assessment of iron and steel industry sector, improve activity data and assessment of chemical industry sector, improve activity data and assessment of the production and consumption of HFCs, PFCs and SF6 sector)

**04. Description of activities, duties and responsibilities**

- Improve activity data and assessment for Lime Production, Limestone and Dolomite Use Sectors

- Assess the multiple sources of limestone and dolomite production and consumption data that are available, each one with a different characterization, depending on the source and type of use of the limestone. Compare, improve and consolidate these data in order to improve accuracy of the information on each use of limestone and dolomite.

- Survey the use of limestone in the iron and steel industry in order to identify possible accounting duplication with the lime production sector, and improve the accuracy of the CO2 emissions estimation.

**05. Expected Outputs:** Elaborate the Inventory for the Industry Sector – Lime Production, Limestone and Dolomite Use Sectors.

**06. Professional Qualifications**

. Technical capacity (technical staff)

. Experience in greenhouse gas inventory for the lime production, limestone and dolomite use sectors

. Ability to aggregate other institutions and research centres

. University degree

- 07. **Responsible to:** Coordinate the Inventory for the Industry Sector – Lime Production, Limestone and Dolomite Use Sectors
- 08. **Place of Work:** To be defined
- 09. **Duration:** Equivalent to Project duration
- 10. **Salary Category:** To be defined
- 11. **Budget Line :** GEF

**Terms of Reference No 14**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

- 01. **Title :** Inventory for the Industry Sector – Iron and Steel Industry Sector
- 02. **Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular the Brazilian Steel Industry Institute (IBS).

### **03. Related Results of Project Document**

Output 1.1.2 - Inventory for the Industry Sector elaborated (involving some activities: improve the assessment for the cement production sector, improve activity data and assessment for lime production, limestone and dolomite use sectors, improve activity data and assessment of iron and steel industry sector, improve activity data and assessment of chemical industry sector, improve activity data and assessment of the production and consumption of HFCs, PFCs and SF6 sector)

### **04. Description of activities, duties and responsibilities**

- Improve activity data and assessment of Iron and Steel Industry Sector
- Assess of overall industrial process, identifying different technologies, accounting for different carbon containing input products, separating emissions from fossil fuel combustion from emissions from the reduction process. This will be done through questionnaires developed and applied together with the industry association.
- Assess and improve data for the pig iron independent producers. Besides the integrated iron and steel producers there are many small pig iron producers that supply the iron industry. Data on production and details of technical processes and data on production are not reliable enough and should be improved.

05. Expected Outputs: Elaborate the Inventory for the Industry Sector – Iron and Steel Industry Sector.

06. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the iron and steel industry sector
- . Ability to aggregate other institutions and research centres
- . University degree

07. Responsible to: Coordinate the Inventory for the Industry Sector – Iron and Steel Industry Sector

08. Place of Work: To be defined

09. Duration: Equivalent to Project duration

10. Salary Category: To be defined

11. Budget Line : GEF

## Terms of Reference No. 15

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Industry Sector – Chemical Industry Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular the Brazilian Chemical Industry Association (ABIQUIM).

### **03. Related Results of Project Document**

Output 1.1.2 - Inventory for the Industry Sector elaborated (involving some activities: improve the assessment for the cement production sector, improve activity data and assessment for lime production, limestone and dolomite use sectors, improve activity data and assessment of iron and steel industry sector, improve activity data and assessment of chemical industry sector, improve activity data and assessment of the production and consumption of HFCs, PFCs and SF6 sector)

### **04. Description of activities, duties and responsibilities**

- Improve activity data and assessment of Chemical Industry Sector
- In the FNC, estimates from the Chemical Industry were mostly based in the production data and IPCC default emission factors. For some industries were assessment of the technology was conducted by the

industry association, country specific emission factor was used. As actual emissions are dependent of the technology and conditions of use, those assessments should be extended and improved for the main products, including, adipic acid, nitric acid and ammonia.

05. Expected Outputs: Elaborate the Inventory for the Industry Sector – Chemical Industry Sector
06. Professional Qualifications
  - . Technical capacity (technical staff)
  - . Experience in greenhouse gas inventory for the chemical industry sector
  - . Ability to aggregate other institutions and research centres
  - . University degree
07. Responsible to: Coordinate the Inventory for the Industry Sector – Chemical Industry Sector
08. Place of Work: To be defined
09. Duration: Equivalent to Project duration
10. Salary Category: To be defined
11. Budget Line : GEF

#### **Terms of Reference No. 16**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Industry Sector – Production and Consumption of HFCs, PFCs and SF6 Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the

Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular, in the case of PFC, with the Brazilian Aluminum Association - ABAL.

**03. Related Results of Project Document:** Output 1.1.2 - Inventory for the Industry Sector elaborated (involving some activities: improve the assessment for the cement production sector, improve activity data and assessment for lime production, limestone and dolomite use sectors, improve activity data and assessment of iron and steel industry sector, improve activity data and assessment of chemical industry sector, improve activity data and assessment of the production and consumption of HFCs, PFCs and SF6 sector)

**04. Description of activities, duties and responsibilities**

- Improve activity data and assessment of the Production and Consumption of HFCs, PFCs and SF6 Sector
- Improve data collection procedures for identifying HFCs, PFCs imports and exports, by type of product, including products contained in equipments.
- Research the use of SF6 in electrical equipment, to obtain data on the imports of the product, evolution of stock of SF6 in the equipments, maintenance procedures and estimation of leakage.

**05. Expected Outputs:** Elaborate the Inventory for the Industry Sector – Production and Consumption of HFCs, PFCs and SF6 Sector

**06. Professional Qualifications**

- Technical capacity (technical staff)
- Experience in greenhouse gas inventory for the production and consumption of HFCs, PFCs and SF6 sector
- Ability to aggregate other institutions and research centres
- University degree

**07. Responsible to:** Coordinate the Inventory for the Industry Sector – Production and Consumption of HFCs, PFCs and SF6 Sector

**08. Place of Work.** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

## Terms of Reference No. 17

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title:** Inventory for the Agricultural Sector – Livestock Enteric Fermentation and Manure Management Sectors

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners. The Brazilian Agricultural Research Corporation (EMBRAPA) will be responsible to coordinate the Inventory for the Agricultural Sector – Livestock Enteric Fermentation and Manure Management Sectors.

### **03. Related Results of Project Document**

Output 1.1.3 - Inventory for the Agricultural Sector elaborated (involving some activities: improve country specific emission factors for livestock enteric fermentation and manure management sectors, improve the assessment of N<sub>2</sub>O emissions from agricultural soils, develop country specific emission factors for rice cultivation and improve and extend activity data, improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning, and improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas).

**04. Description of activities, duties and responsibilities**

- Improve country specific emission factors for Livestock Enteric Fermentation and Manure Management Sectors
- Research the characterization of Brazilian cattle, and the distinct raising systems, including the assessment of regional differences and their influence of emission factors for enteric fermentation.
- Improve data related to manure management systems, including regional assessment of share of usage of each system, and emission factors for the most important systems. Emphasis will be given to management practices for cattle (dairy and beef), swine and poultry, with assessment of the destination of the products of the management systems.

**05. Expected Outputs:** Elaborate the Inventory for the Agricultural Sector – Livestock Enteric Fermentation and Manure Management Sectors

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for the livestock enteric fermentation and manure management sectors
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Agricultural Sector – Livestock Enteric Fermentation and Manure Management Sectors

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No. 18**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Agricultural Sector – Agricultural Soils

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a

bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil's First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 1.1.3 - Inventory for the Agricultural Sector elaborated (involving some activities: improve country specific emission factors for livestock enteric fermentation and manure management sectors, improve the assessment of N<sub>2</sub>O emissions from agricultural soils, develop country specific emission factors for rice cultivation and improve and extend activity data, improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning, and improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas).

### **04. Description of activities, duties and responsibilities**

- Improve the assessment of N<sub>2</sub>O emissions from Agricultural Soils
- Improve data accuracy on organic soils and agriculture production. The statistics of area of organic soils used in agriculture is particularly poor and should be improved for the SNC. Data related to crop production will also be reassessed together with a better evaluation of corresponding amount of residues left on the field after harvesting.
- Research on N<sub>2</sub>O emission factors associated with the biological nitrogen fixation in soybean production. In the 1996 Revised IPCC guidelines it is suggested that emissions due to nitrogen fixation could be estimated using the nitrogen content in residues as a proxy. In the IPCC Good Practice Guidance 2000, the default amount of crop residues for soybeans was revised without reevaluation of this assumption. As the nitrogen contained in the residues is also accounted for when estimating the N<sub>2</sub>O emissions, using this assumption may lead to overestimation of the emissions. Therefore, studies on the biological nitrogen fixation process will be conducted, in order to correctly assess the N<sub>2</sub>O emissions associated, including the influence of regional conditions.
- Improve data on animal manure destination and its usage as fertilizer. A better assessment of management system types as well as current destination of their output for each State is fundamental for the estimation of the amount of manure products used as fertilizer.
- Research country specific parameters for estimate emissions from different types of soils, climate conditions, and fertilizing practices, including sample measurement of emissions. The amount of nitrogen that is emitted as N<sub>2</sub>O after it is incorporated in the soil is rather uncertainty and will vary depending on agricultural practices and conditions. Taking in consideration the country size and regional diversity, this research is fundamental for reducing the uncertainty of the estimates.

- Develop country-specific emission factors for N<sub>2</sub>O emissions produced by manure from grazing cattle, based on regional differences, climate conditions, pasture characteristics and management practices. The majority of Brazilian cattle are raised as grazing cattle, and almost half of the N<sub>2</sub>O emissions from soils estimated in the FNC are associated with manure from grazing animals. For this reason, the assessment of the fate of the nitrogen contained in the manure is particularly important. The assessment will include emissions measurement at different conditions.

**05. Expected Outputs:** Elaborate the Inventory for the Agricultural Sector – Agricultural Soils

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for agricultural soils
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Agricultural Sector – Agricultural Soils

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No. 19**

Number and Project Title: BRA/---/---- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Agricultural Sector – Rice Cultivation

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners. The Brazilian Agricultural Research Corporation (EMBRAPA) will be responsible to coordinate the Inventory for the Agricultural Sector – Rice Cultivation.

### **03. Related Results of Project Document**

Output 1.1.3 - Inventory for the Agricultural Sector elaborated (involving some activities: improve country specific emission factors for livestock enteric fermentation and manure management sectors, improve the assessment of N<sub>2</sub>O emissions from agricultural soils, develop country specific emission factors for rice cultivation and improve and extend activity data, improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning, and improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas).

### **04. Description of activities, duties and responsibilities**

- Develop country specific emission factors for Rice Cultivation and improve and extend activity data.
- Research the methane emission from rice cultivation under different conditions of climate, soil and agricultural practices, including sample measurement of emissions. The project aims to estimate the methane emission rates in flooded rice areas, under different soil and climatic conditions. Methane emission measurements will be done in experimental areas in the States of Rio Grande do Sul (Porto Alegre and Uruguaiana, RS) and São Paulo (Pindamonhangaba, SP), the biggest rice producers. The methodology for the methane estimation to be used, after collection of data and variables estimation, include the simulation, by mathematical modeling, of methanogenic processes in flooded rice crop systems, taking into account the experimental data.

**05. Expected Outputs:** Elaborate the Inventory for the Agricultural Sector – Rice Cultivation

### **06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for rice cultivation
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Agricultural Sector – Rice Cultivation

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

## Terms of Reference No. 20

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title:** Inventory for the Agricultural Sector – CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> Emissions from Agricultural Residues Burning

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 1.1.3 - Inventory for the Agricultural Sector elaborated (involving some activities: improve country specific emission factors for livestock enteric fermentation and manure management sectors, improve the assessment of N<sub>2</sub>O emissions from agricultural soils, develop country specific emission factors for rice cultivation and improve and extend activity data, improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning, and improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas).

### **04. Description of activities, duties and responsibilities**

- Improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning.

- Improve data for sugar cane area burned through survey to be conducted by sectoral associations and research institutions. Improve data for emission factors through field experiments under actual conditions.
- Assess the occurrence of residues burning practice for crops other than sugar cane, evaluating area submitted to burning, biomass content, and emission factors.

**05. Expected Outputs:** Elaborate the Inventory for the Agricultural Sector – CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> Emissions from Agricultural Residues Burning

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Agricultural Sector – CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> Emissions from Agricultural Residues Burning

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No. 21**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Agricultural Sector – Estimate Emissions due to the Prescribed Burning of Savannas

**02. Background**

The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners. The National Institute for Space Research - INPE will provide satellite images needed for the study related to savanna burning.

### 03. Related Results of Project Document

Output 1.1.3 - Inventory for the Agricultural Sector elaborated (involving some activities: improve country specific emission factors for livestock enteric fermentation and manure management sectors, improve the assessment of N<sub>2</sub>O emissions from agricultural soils, develop country specific emission factors for rice cultivation and improve and extend activity data, improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning, and improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas).

### 04. Description of activities, duties and responsibilities

- Improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas
- Research the renewal time of burning, estimating the average time between subsequent burnings of the same area. Savannah burning is a recurrent process, in the sense that the vegetation in an area burned will regrow and burn again after some years. The assessment of this burning recurrence time for each physiognomy is essential to govern the methodology parameters.
- Research the image ability to identify past burning, estimating the average time after which a burning event cannot be identified in an image. The identification of a burning scar in a satellite image can be only done for a limited time, leading to the increase of number of images needed to cover a burning season. The assessment of this problem is essential to establish the minimum number of images necessary for estimating the total area burned and its emissions.
- Review the information on the vegetation cover of the "Cerrado" (Brazilian savannas) region, by class of vegetation, and establishment of a database, to be used in the estimation of the GHG emissions. Maps of vegetal physiognomies in the "Cerrado" must be improved as well as the evaluation of biomass content for each physiognomy.
- Estimate the GHG emissions from savanna burning, using the analysis of a sample of satellite images for the period 1990-2000. Based on the previous activities, a sample of satellite images will be selected. The burning scars will be identified in each image for each vegetal physiognomy.

### 05. Expected Outputs

Elaborate the Inventory for the Agricultural Sector – Estimate Emissions due to the Prescribed Burning of Savannas

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for estimate emissions due to the prescribed burning savannas
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to.** Coordinate the Inventory for the Agricultural Sector – Estimate Emissions due to the Prescribed Burning of Savannas

**08. Place of Work:** To be defined

**09. Duration.** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No. 22**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Land-Use Change and Forestry Sector - Forest and Grassland Conversion Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners. The National Institute for Space Research (INPE) will provide satellite images needed for the project.

03. Related Results of Project Document

Output 1.1.4 - Inventory for the Land-Use Change and Forestry Sector elaborated (involving some activities: improve the assessment of emissions for the forest and grassland conversion sector, improve the assessment of emissions for the changes in forest and other woody biomass sector, improve activity data and assessment of emissions of the CO<sub>2</sub> emissions and removals from soils sector, and methane emissions from water reservoirs).

04. Description of activities, duties and responsibilities

- Improve the assessment of emissions for the Forest and Grassland Conversion sector
- Improve data on biomass density for the different biomes and types of vegetation. In order to cover gaps in the RADAM information used in the FNC and better adjust for biomass fractions not covered in the RADAM project, research on experimental plots will be conducted.
- Improve and extend the data of area conversion and regrowth, using satellite images. The number of the satellite scenes covered will be increased and conversion data for the year 2000 will be acquired besides the existing data for years 1988 and 1994. For each of the years 1988 and 1994 it is estimated the need for the analysis of 308 TM/Landsat-5 scenes (185 for the Amazonian biome, 76 for the Cerrado biome, 37 for the Caatinga biome and 10 for the Atlantic Forest) not included in the sample scheme conducted in the FNC. Reassessment of the scenes covered in the FNC will be needed for consistency. For the year 2000, the analysis of 480 TM/Landsat-5 scenes will be sought (229 for the Amazonia, 103 for the Cerrado, 53 for the Caatinga, 80 for the Atlantic Forest and 15 for the Pantanal biome). Conversion areas and regrowth areas will be identified for each scene, and discriminated by vegetation physiognomy.
- Estimate the CO<sub>2</sub> emissions from forest and grassland conversion for the period from 1990 to 2000. Based on the above sub-activities, the estimation for the period 1988-1994 will be improved, and the estimation for the period 1994-2000 calculated.

05. **Expected Outputs:** Elaborate the Inventory for the Land-Use Change and Forestry Sector - Forest and Grassland Conversion Sector

06. **Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for land-use change and forestry sector
- . Ability to aggregate other institutions and research centres
- . University degree

07. **Responsible to:** Coordinate the Inventory for the Land-Use Change and Forestry Sector - Forest and Grassland Conversion Sector

08. **Place of Work:** To be defined

09. **Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

### **Terms of Reference No. 23**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Inventory for the Land-Use Change and Forestry Sector - Changes in Forest and Other Woody Biomass Stocks Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners. The National Institute for Space Research (INPE) will provide satellite images needed for the project.

### **03. Related Results of Project Document**

Output 1.1.4 - Inventory for the Land-Use Change and Forestry Sector elaborated (involving some activities: improve the assessment of emissions for the forest and grassland conversion sector, improve the assessment of emissions for the changes in forest and other woody biomass sector, improve activity data

and assessment of emissions of the CO<sub>2</sub> emissions and removals from soils sector, and methane emissions from water reservoirs).

**04. Description of activities, duties and responsibilities**

- Improve the assessment of emissions for the Changes in Forest and Other Woody Biomass Stocks sector
- Assess the forestation and reforestation areas, including evolution in time, using satellite images. Comparison with data from paper and pulp industry association and charcoal industry association.

**05. Expected Outputs:** Elaborate the Inventory for the Land-Use Change and Forestry Sector - Changes in Forest and Other Woody Biomass Stocks Sector

**06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for land-use change and forestry sector
- . Ability to aggregate other institutions and research centres
- . University degree

**07. Responsible to:** Coordinate the Inventory for the Land-Use Change and Forestry Sector - Changes in Forest and Other Woody Biomass Stocks Sector

**08. Place of Work:** To be defined

**09. Duration:** Equivalent to Project duration

**10. Salary Category:** To be defined

**11. Budget Line :** GEF

**Terms of Reference No. 24**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Inventory for the Inventory for the Land-Use Change and Forestry Sector - Soils Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular with Graduate School of Agriculture "Luiz de Queiroz" - ESALQ (Escola Superior de Agricultura "Luiz de Queiroz"). The National Institute for Space Research (INPE) will provide satellite images needed for the project.

### **03. Related Results of Project Document**

Output 1.1.4 - Inventory for the Land-Use Change and Forestry Sector elaborated (involving some activities: improve the assessment of emissions for the forest and grassland conversion sector, improve the assessment of emissions for the changes in forest and other woody biomass sector, improve activity data and assessment of emissions of the CO<sub>2</sub> emissions and removals from soils sector, and methane emissions from water reservoirs).

### **04. Description of activities, duties and responsibilities**

- Improve activity data and the assessment of emissions of the CO<sub>2</sub> Emissions and Removals from Soils sector
- Estimation of the carbon content of soils. In this sub-activity the evaluation of the original carbon stock contained in the first 30 cm of the upper layer of Brazilian types of soil under different types and vegetation cover and climate conditions will be undertaken, improving the study conducted in the FNC.
- Improve data on conversion of land use, using satellite images. For this sub activity the estimated data need will come from 480 TM/Landsat-5satellite images for each of the years 1988, 1994 and 2000 in order to present an accurate assessment of not only conversion results but also conversion patterns having impacts on GHG emissions.
- Estimation of CO<sub>2</sub> emissions from Brazilian soils. The data for carbon content of soils and the data on conversion of land use, obtained in sub-activities 1.1.4.3.1 and 1.1.4.3.2 will be combined to evaluate the CO<sub>2</sub> emissions from soils due to land-use change.

### **05. Expected Outputs:** Elaborate the Inventory for the Land-Use Change and Forestry Sector - Soils Sector

### **06. Professional Qualifications**

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for land-use change and forestry sector
- . Ability to aggregate other institutions and research centres
- . University degree

07. **Responsible to:** Coordinate the Inventory for the Land-Use Change and Forestry Sector - Soils Sector
08. **Place of Work:** To be defined
09. **Duration:** Equivalent to Project duration
10. **Salary Category:** To be defined
11. **Budget Line :** GEF

### Terms of Reference No. 25

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

01. Title: Inventory for the Inventory for the Land-Use Change and Forestry Sector - Methane Emissions from Water Reservoirs

02. Background: The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners. The Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering of the Federal University of Rio de Janeiro (COPPE) will be responsible to coordinate the Inventory for the Land-Use Change and Forestry Sector - Methane Emissions from Water Reservoirs.

03. Related Results of Project Document

Output 1.1.4 - Inventory for the Land-Use Change and Forestry Sector elaborated (involving some activities: improve the assessment of emissions for the forest and grassland conversion sector, improve the assessment of emissions for the changes in forest and other woody biomass sector, improve activity data and assessment of emissions of the CO<sub>2</sub> emissions and removals from soils sector, and methane emissions from water reservoirs).

04. Description of activities, duties and responsibilities

- Methane Emissions from Water Reservoirs
- Estimation of methane emissions from reservoirs, taking in consideration the characteristics of reservoirs, including climate conditions, type of vegetation and age of reservoir. The study should use both sample measurement of several reservoirs, and continuous monitoring of selected reservoirs.
- Initialize long-term project of comparison of GHG emissions before and after the construction of a reservoir. A site of a planned reservoir will be monitored for the assessment of natural emissions.

**05. Expected Outputs:** Elaborate the Inventory for the Land-Use Change and Forestry Sector - Methane Emissions from Water Reservoirs

06. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in greenhouse gas inventory for methane emissions from water reservoirs
- . Ability to aggregate other institutions and research centres

07. Responsible to: Coordinate the Inventory for the Land-Use Change and Forestry Sector - Methane Emissions from Water Reservoirs

08. Place of Work: To be defined

09. Duration: Equivalent to Project duration

10. Salary Category: To be defined

11. Budget Line: GEF

**Terms of Reference No. 26**

Number and Project Title: BRA/---/---- Second National Communication of Brazil to the UNFCCC

01. Title : Inventory for the Waste Sector - Solid Waste Disposal Sector and Waste Incineration Sector

02. Background: The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the

implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular the Environment Sanitation Agency of the State of São Paulo (CETESB).

### 03. Related Results of Project Document

Output 1.1.5 - Inventory for the Waste Sector elaborated (involving some activities: improve data and extend estimates for solid waste disposal sector, improve data and extend estimates for wastewater handling sector, and estimate the GHG emissions from waste incineration sector).

### 04. Description of activities, duties and responsibilities

- Improve data and extend estimates for Solid Waste Disposal Sector
- Survey at least 20 waste disposal sites in the largest Brazilian urban centers (Salvador, Recife, Fortaleza, Belo Horizonte, Rio de Janeiro, São Paulo, Campinas, Guarulhos, Santo André, São Bernardo, Osasco, Belo Horizonte, Manaus, Brasília, Goiânia, Porto Alegre, Florianópolis, Curitiba, etc.) and improve database with characteristics of site and waste average composition and quantity.
- Research the factors used for emissions estimates, including the analysis of adequacy of default IPCC emission factors and improvement of these factors, where possible, taking in consideration regional diversity.
- Estimate the GHG emissions from Waste Incineration sector
- Survey the clinic and industrial waste incineration installations, in order to evaluate the order of magnitude of their emissions.

### 05. Expected Outputs: Elaborate the Inventory for the Waste Sector - Solid Waste Disposal Sector and Waste Incineration Sector

- 06. Professional Qualifications
  - . Technical capacity (technical staff)
  - . Experience in greenhouse gas inventory for the waste sector
  - . Ability to aggregate other institutions and research centres
  - . University degree
- 07. Responsible to: Coordinate the Inventory for the Waste Sector - Solid Waste Disposal Sector and Wastewater Handling Sector
- 08. Place of Work: To be defined
- 09. Duration: Equivalent to Project duration
- 10. Salary Category: To be defined
- 11. Budget Line: GEF

**Terms of Reference No. 27**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

1. **Title :** Inventory for the Waste Sector - Wastewater Handling Sector
2. **Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular the Environment Sanitation Agency of the State of São Paulo (CETESB).

### **3. Related Results of Project Document**

Output 1.1.5 - Inventory for the Waste Sector elaborated (involving some activities: improve data and extend estimates for solid waste disposal sector, improve data and extend estimates for wastewater handling sector, and estimate the GHG emissions from waste incineration sector).

### **4. Description of activities, duties and responsibilities**

- Improve data and extend estimates for Wastewater Handling sector
- Survey at least 30 domestic wastewater handling systems and sites and improve database with characteristics of site and wastewater composition and quantity.
- Survey the industrial wastewater handling systems for the industrial sub-sectors that are the main contributors for the methane emissions from wastewater handling identified in the FNC, including the industries of beverage, dairy products, sugarcane products and leather.

### **5. Expected Outputs: Elaborate the Inventory for the Waste Sector - Wastewater Handling Sector**

### **6. Professional Qualifications**

- . Technical capacity (technical staff)
  - . Experience in greenhouse gas inventory for the waste sector
  - . Ability to aggregate other institutions and research centres
  - . University degree
7. Responsible to: Coordinate the Inventory for the Waste Sector - Wastewater Handling Sector
8. Place of Work: To be defined
9. Duration: Equivalent to Project duration
10. Salary Category: To be defined
11. Budget Line: GEF

### **Terms of Reference No. 28**

Number and Project Title: BRA/---/---- Second National Communication of Brazil to the UNFCCC

#### **01. Title : Establishment of Quality Control and Quality Assurance Procedures**

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the

implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 1.2.1 Establish Quality Control and Quality Assurance Procedures

#### **04. Description of activities, duties and responsibilities**

- Develop and Implement a Quality Control Pilot Plan

The Quality Control Plan will consist of a system of routine technical activities, that the Ministry of Science and Technology, responsible for the implementation of this project, will implement through its climate change “country team”, to perform routine and consistent checks to ensure data integrity, correctness, and completeness; identify and address errors and omissions; and document and archive inventory material in order to measure and control the quality of the inventory as it is being developed. QC activities will include general methods such as accuracy checks on data acquisition and calculations and the use of approved standardized procedures for emission calculations, measurements, estimating uncertainties, archiving information and reporting.

- Develop and Implement Quality Assurance Procedures.
- Once the inventory is finalized, QA activities will be performed, including a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process. The Ministry of Science and Technology intends to promote a peer review of the inventory estimates, based on the procedure used by the IPCC in its report reviews. This procedure was used in the FNC, regarding the “Steps taken or envisaged to implement the UNFCCC in Brazil”, and it was considered successful.

- 05. Expected Outputs :** Fulfillment of activities described above
- 06. Professional Qualifications
  - . University degree
  - . Experience in the object area
  - . English desirable
- 07. Responsible to: Establish Quality Control and Quality Assurance Procedures
- 08. Place of Work: To be defined
- 09. Duration: To be defined
- 10. Salary Category: To be defined
- 11. Budget Line: GEF
- 12. Observation: Will be necessary four members for the staff**

**Terms of Reference No. 29**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Establishment of a Database for Activity Data and Emission Factors

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 1.2.2 Establish a Database for Activity Data and Emission Factors

#### **04. Description of activities, duties and responsibilities**

- Develop a Database for storing activity data and emission factors, keeping track of methodology and assumptions underlined in their establishment.
- The quality of national inventories depends substantially on secure data. For this reason the development of emission factors and activity data database is essential to provide transparency of the information and reduce errors in the inventory development. Furthermore, the need of developing country specific emission factors and organizing them together with the corresponding activity data and parameter used in the National inventory is fundamental to improve the transparency and the quality of the Brazilian Inventory. For this reason, easily accessible public database on GHG emission factors with supporting scientific information from Brazil would help improving the quality of the National GHG inventory as well as help other countries that have similar circumstances in a cost-effective way.

#### **05. Expected Outputs :** Fulfillment of activities described above

06. Professional Qualifications

- . University degree
- . Experience with database
- . English desirable

07. Responsible to: Establish a Database for Activity Data and Emission Factors

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line : GEF

**12. Observation: Will be necessary four members for the staff**

### **Terms of Reference No. 30**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Regional Modeling of Climate and Climate Change Scenarios

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners. The Center for Weather Forecasts and Climate Research (CPTEC) of the National Institute for Space Research (INPE) will be responsible to coordinate the regional modeling of climate and climate change scenarios.

### **03. Related Results of Project Document**

Output 2.1.1 - Analyze climate change scenarios for South America based on global climate change models from the IPCC-Data Distribution Center (IPCC-DDC) for different SRED scenarios (provided by the IPCC – DDC).

Output 2.1.2 - Develop and improve the regional Eta/CPTEC model.

Output 2.1.3 - Develop and analyze climate-change downscaled scenarios for Brazil, making use of the new super computer being installed at CPTEC.

Output 2.1.4 - Enable the specialists of the CPTEC/INPE (National Institute for Space Research) to develop capacity for climate modeling on longer time scales, and to develop capacity building in V&A.

### **04. Description of activities, duties and responsibilities**

- Elaborate the Regional Modeling of Climate and Climate Change Scenarios
- Analyze climate change scenarios for South America based on global climate change models from the IPCC-Data Distribution Center (IPCC-DDC) for different SRED scenarios (provided by the IPCC – DDC).
- Develop and improve the regional Eta/CPTEC model.

- Develop and analyze climate-change downscaled scenarios for Brazil, making use of the new super computer being installed at CPTEC.
- Enable the specialists of the CPTEC/INPE (National Institute for Space Research) to develop capacity for climate modeling on longer time scales, and to develop capacity building in V&A.

**04. Expected Outputs:** Elaborate a Regional Modeling of Climate and Climate Change Scenarios.

05. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in regional modeling of climate and climate change scenarios
- . Ability to aggregate other institutions and research centres
- . University degree

06. Responsible to: Coordinate the results of regional modeling of climate and climate change scenarios.

07. Place of Work: To be defined

08. Duration: Equivalent to Project duration

09. Salary Category: To be defined

10. Budget Line: GEF

### **Terms of Reference No. 31**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Report on Vulnerability and Adaptation in the Health Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular the National Institute of Health (Fiocruz).

### **03. Related Results of Project Document**

Output 2.2.1 - Report on Vulnerability and Adaptation in the Health Sector elaborated (involving some activities: study the vulnerability to climate related diseases (such as Malaria, Leishmaniasis and Cholera) and Adaptation Measures).

### **04. Description of activities, duties and responsibilities**

- Study the vulnerability to climate related diseases (such as Malaria, Leishmaniasis and Cholera) and Adaptation Measures
- Evaluate empirical and critical interactions among climate factors and ecosystem mediators of the diseases system, as well as specific human health outcomes. For instance, some etiological agents are known to be dependent on high temperatures and moisture availability, as well as human behavior, demographic and urbanization patterns and human habitation. Thus, analysis of climate impacts on the disease and on the mortality rates need to include not only the agents' replication rates, but also forecasts on human settlements and water provisions systems.
- Analyze, in special, the reasons for the rise of diseases, as well as the causes for the spread of the disease to non-traditional areas of occurrence.
- Estimate future time trends in diseases occurrence as well as weather disasters facing higher temperatures, altered precipitation and moisture patterns, including the use of integrated, system-based numerical models if deemed necessary. The analysis must try to cover as much as possible the cause-effect relationship with respect to global atmospheric changes and vectors and parasites behavior, i.e., relationships between temperature, precipitation and vector and parasite's characteristics.
- Identify public policies and intervention measures, as well as institutional arrangements, as adaptation options towards the control of these climate-related diseases. Attention should be given to measures that eliminate the harmful exposure of the population, either by eliminating the agent, or by constructing a mechanism to protect the individual from exposure. Moreover, previous successful experiences in eradicating or decreasing the disease occurrence rates carried out within the country or abroad could subsidize this identification.

05. Expected Outputs: Elaborate the Report on Vulnerability and Adaptation in the Health Sector.

06. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in vulnerability and adaptation in the health sector
- . Ability to aggregate other institutions and research centres
- . University degree

07. Responsible to: Coordinate the Report on Vulnerability and Adaptation in the Health Sector

08. Place of Work: To be defined
09. Duration: Equivalent to Project duration
10. Salary Category: To be defined
11. Budget Line: GEF

### **Terms of Reference No. 32**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Report on Vulnerability and Adaptation in the Energy Sector

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

Output 2.2.2 - Report on Vulnerability and Adaptation in the Energy Sector elaborated (involving some activities: evaluate the vulnerability of the power sector and possible adaptation measures).

**04. Description of activities, duties and responsibilities**

- Evaluate the vulnerability of the power sector and possible adaptation measures
- Analyze regional climate phenomena effects over the Brazilian hydrological cycle, with focus on some special hydrographic basins (Paraguai, Paraná and São Francisco, which are located where live more than 60% of the country's inhabitants), as well as effects over the hydropower energy supply and possible changes on fossil fuel consumption.
- Analyze changes in energy demand, which may include the effects on electricity consumption of air conditioning, water pumping, refrigeration and water heating.
- Identify the effects of regional climate phenomena occurred in the last years, over the energy demand in large urban areas within the country (over 500,000 inhabitants).
- Research on the effects of regional climate phenomena, such as the "El Niño" and the "La Niña", in the latest years, over Brazilian reservoirs and hydrological cycles. The study of the climate variability due to El Niño and La Niña despite not being related to climate change can provide valuable insights to future vulnerability patterns regarding global warming.
- Identify policies and measures for adaptation of the energy sector to the possible impacts of climate change.

05. Expected Outputs: Elaborate the Report on Vulnerability and Adaptation in the Energy Sector.

06. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in vulnerability and adaptation in the energy sector
- . Ability to aggregate other institutions and research centres
- . University degree

07. Responsible to: Coordinate the Report on Vulnerability and Adaptation in the Energy Sector

08. Place of Work: To be defined

09. Duration: Equivalent to Project duration

10. Salary Category: To be defined

11. Budget Line: GEF

**Terms of Reference No. 33**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title:** Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 2.2.3 - Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification elaborated (involving some activities: estimate the biophysical impacts of climate change on hydrologic resources in terms of water quantity (annual seasonal distribution)).

### **04. Description of activities, duties and responsibilities**

- Estimate the biophysical impacts of climate change on hydrologic resources in terms of water quantity (annual seasonal distribution)
- Estimate the biophysical impacts of climate change on hydrologic resources in terms of water quantity and quality, including the possibility of floods occurrence, and identify possible adaptation options. Climate change can affect the water quality aspect of the water management system in three ways: (1) reduced hydrologic resources may leave less dilution flow in the stream, leading to degraded water quality; (2) higher temperatures reduce the dissolved oxygen content in water bodies; and (3) in response to climate change, water uses may increase the concentration of pollution being released to the streams.
- Research on the socioeconomic impacts of climate change on water demand/ water consumption - agriculture (irrigation and livestock); industry (industrial, mining, navigation, recreation); energy (thermoelectric cooling and hydroelectric power), municipal (public supply, domestic and commercial), reservoir - including direct impacts on hydrological resources and indirect impacts via other biophysical impacts, and identify possible adaptation options.
- Assess the physical, economical and social effects of climate change in areas prone to desertification in the country, namely those located in semi-arid and dry sub-humid regions in Brazil, and identify possible options in order to cope with climate change effects on areas prone to desertification.

**05. Expected Outputs:** Elaborate the Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification.

06. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in vulnerability and adaptation related to water resources, floods and desertification
- . Ability to aggregate other institutions and research centres
- . University degree

07. Responsible to: Coordinate the Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification

08. Place of Work: To be defined

09. Duration: Equivalent to Project duration

10. Salary Category: To be defined

11. Budget Line : GEF

#### **Terms of Reference No. 34**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Report on Vulnerability and Adaptation in the Agriculture

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the

Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners, in particular Brazilian Agricultural Research Corporation (EMBRAPA).

### **03. Related Results of Project Document**

Output 2.2.4 - Report on Vulnerability and Adaptation in the Agriculture elaborated (involving some activities: study of possible effects of climate change on the Brazilian agricultural sector).

### **04. Description of activities, duties and responsibilities**

- Study of possible effects of climate change on the Brazilian agricultural sector
- Analyze the effects of the increased concentration of CO<sub>2</sub> at the atmosphere over the photosynthesis, considering that responsiveness may vary among different plants and so reflects over the agricultural production. Direct effects of elevated CO<sub>2</sub> to ambient CO<sub>2</sub> will be monitored through the growing season of C<sub>3</sub> (soybeans and tomato) and C<sub>4</sub> (sugarcane and sorghum) crops, using controlled environment growth chambers, with temperature and gas flux sensors.

**05. Expected Outputs:** Elaborate the Report on Vulnerability and Adaptation in the Agriculture.

06. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in vulnerability and adaptation in the agriculture
- . Ability to aggregate other institutions and research centres
- . University degree

07. Responsible to: Coordinate the Report on Vulnerability and Adaptation in the Agriculture

08. Place of Work: To be defined

09. Duration: Equivalent to Project duration

10. Salary Category: To be defined

11. Budget Line: GEF

### **Terms of Reference No. 35**

Number and Project Title: BRA/---/---- Second National Communication of Brazil to the UNFCCC

**01. Title :** Report on Vulnerability and Adaptation in the Coastal Zone Management

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 2.2.5 - Report on Vulnerability and Adaptation in the Coastal Zone Management elaborated (involving some activities: analyze the overall sea level rise in Brazil as a consequence of climate change).

### **04. Description of activities, duties and responsibilities**

- Analyze the overall sea level rise in Brazil as a consequence of climate change
- Collect the best geographic and socioeconomic data available to evaluate the above-mentioned impacts. Previous studies have developed a methodology based on the data found out: the coastal geomorphology, the occurrence of erosive phenomena, the availability of gauges and the geographical regional division.
- Undertake detailed studies over the Brazilian coast of the possible effects and answers to realistic scenarios of sea level rise. These studies may include an evaluation of the effects caused by this event, a description of the economic activities that may be affected and a critic follow up of the physical changes.
- Design and update a systematic data set of oceanographic and meteorological information, according to the international patterns.
- Identify adaptation options to cope with the impacts of the sea level rise in Brazil examined during this study.

05. Expected Outputs: Elaborate the Report on Vulnerability and Adaptation in the Coastal Zone Management.
06. Professional Qualifications
  - . Technical capacity (technical staff)
  - . Experience in vulnerability and adaptation in the coastal zone management
  - . Ability to aggregate other institutions and research centres
  - . University degree
07. Responsible to: Coordinate the Report on Vulnerability and Adaptation in the Coastal Zone Management
08. Place of Work: To be defined
09. Duration: Equivalent to Project duration
10. Salary Category: To be defined
11. Budget Line : GEF

### **Terms of Reference No. 36**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Report on Vulnerability and Biodiversity

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

Output 2.2.6 - Report on Vulnerability and Biodiversity elaborated (involving some activities: analyze the climate change effects on selected biodiversity aspects in Brazil).

**04. Description of activities, duties and responsibilities**

- Analyze the climate change effects on selected biodiversity aspects in Brazil
- Evaluate the effects of the rise of sea water temperatures – related to global climate changes – on the coral’s photo symbiotic organisms, which depletion cause bleaching as well as might impair the coral’s capacity for enduring and/or adapting to abrupt environmental changes.

05. Expected Outputs: Elaborate the Report on Vulnerability and Biodiversity.

06. Professional Qualifications

- . Technical capacity (technical staff)
- . Experience in vulnerability and biodiversity
- . Ability to aggregate other institutions and research centres
- . University degree

07. Responsible to: Coordinate the Report on Vulnerability and Biodiversity

08. Place of Work: To be defined

09. Duration: Equivalent to Project duration

10. Salary Category: To be defined

11. Budget Line : GEF

**Terms of Reference No. 37**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Consultant in Vulnerability and Adaptation

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties

and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1". In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil's First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

- . Output 2.2.1 Report on Vulnerability and Adaptation in the Health Sector elaborated
- . Output 2.2.2 Report on Vulnerability and Adaptation in the Energy Sector elaborated
- . Output 2.2.3 Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification elaborated
- . Output 2.2.4 Report on Vulnerability and Adaptation in the Agriculture elaborated
- . Output 2.2.5 Report on Vulnerability and Adaptation in the Coastal Zone Management elaborated
- . Output 2.2.6 Report on Vulnerability and Biodiversity elaborated

### **04. Description of activities, duties and responsibilities**

- Analyze the results on the Reports on Vulnerability and Adaptation in all the sectors described in the outputs and produce a compilation report.

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . University Degree;
- . Professional experience of at least 6 years, with specific experience in the field of climate change of at least 2 years;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English; knowledge of other language desirable.

07. Responsible to: Project Consultant on Vulnerability and Adaptation

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined
11. Budget Line. GEF

### **Terms of Reference No. 38**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Coordinator of the Description of National Circumstances

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 3.1 Elaborate a report on National Circumstances

### **04. Description of activities, duties and responsibilities**

- Coordinate the elaboration of the report on national circumstances
- Elaborate a report about the National and Regional Development Priorities.

- Elaborate a report about Existing Institutional Arrangements Relevant to the Preparation of the Inventory on a Continuing Basis.
- Elaborate a report about Special Circumstances, including the Special Needs and Concerns Arising from the Adverse Effects of Climate Change and/or of the Implementation of Response Measures.

05. Expected Outputs: Fulfillment of activities described above
06. Professional Qualifications
  - . Master's Degree;
  - . Professional experience of at least 6 years, with specific experience in the field of climate change of at least 4 years;
  - . Experience in preparing and implementing international projects;
  - . Participation in international negotiations in the field of climate change;
  - . Excellent writing skills in Portuguese (native tongue);
  - . Fluency in English; knowledge of other language desirable.
07. Responsible to: Project Coordinator
08. Place of Work: To be defined
09. Duration: To be defined.
10. Salary Category: To be defined,
11. Budget Line. GEF

### **Terms of Reference No. 39**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Coordinator of the Description of Steps Taken or Envisaged to Implement the Convention

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 3.2 Describe the Steps Taken or Envisaged to Implement the Convention in Brazil

### **04. Description of activities, duties and responsibilities**

- Coordinate the description of the steps taken or envisaged to implement the Convention in Brazil
- Describe programs containing measures to mitigate climate change implemented or been elaborated in Brazil. This activity will build on a baseline activity financed by the Government of Brazil whereby, based on available information, national programmes and actions to mitigate climate change are prioritized and subject to monitoring and reporting at national level.
- Describe programs implemented or been elaborated in Brazil containing measures to facilitate adequate adaptation to climate change.
- Describe other information considered relevant to the achievement of the objective of the Convention in Brazil, regarding transfer of technologies; research and systematic observation; . education, training and public awareness; capacity building activities and, information and networking related to climate change.
- Describe constraints and gaps, and related financial, technical and capacity needs in Brazil.

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . Master's degree;
- . Professional experience of at least 6 years, with specific experience in the field of climate change of at least 4 years;
- . Experience in preparing and implementing international projects;
- . Participation in international negotiations in the field of climate change;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English; knowledge of other language desirable.

07. Responsible to: Project Coordinator

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line : GEF

## **Terms of Reference No. 40**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Technical Consultant in Climate Change

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 3.1 Elaborate a report on National Circumstances

Output 3.2 Describe the Steps Taken or Envisaged to Implement the Convention in Brazil

### **04. Description of activities, duties and responsibilities**

- Elaboration of the report on national circumstances
- Elaborate a report about the National and Regional Development Priorities.
- Elaborate a report about Existing Institutional Arrangements Relevant to the Preparation of the Inventory on a Continuing Basis.
- Elaborate a report about Special Circumstances, including the Special Needs and Concerns Arising from the Adverse Effects of Climate Change and/or of the Implementation of Response Measures.

- Elaborate the description of the steps taken or envisaged to implement the Convention in Brazil
- Describe programs containing measures to mitigate climate change implemented or been elaborated in Brazil. This activity will build on a baseline activity financed by the Government of Brazil whereby, based on available information, national programmes and actions to mitigate climate change are prioritized and subject to monitoring and reporting at national level.
- Describe programs implemented or been elaborated in Brazil containing measures to facilitate adequate adaptation to climate change.
- Describe other information considered relevant to the achievement of the objective of the Convention in Brazil, regarding transfer of technologies; research and systematic observation; . education, training and public awareness; capacity building activities and, information and networking related to climate change.
- Describe constraints and gaps, and related financial, technical and capacity needs in Brazil.

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . University Degree;
- . Professional experience of at least 4years, with specific experience in the field of climate change of at least 2 years;
- . Participation in course or seminar related to climate change;
- . Participation in international negotiations;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English desirable.

07. Responsible to: Elaborate the report on National Circumstances and the description of the steps taken or envisaged to implement the Convention in Brazil

08. Place of Work: To be defined

09. Duration. To be defined

10. Salary Category: To be defined

11. Budget Line : GEF

#### **Terms of Reference No. 41**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**1. Title :** Technical Consultant in Climate Change

**2. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to

meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1". In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil's First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **3. Related Results of Project Document**

Output 3.1 Elaborate a report on National Circumstances

Output 3.2 Describe the Steps Taken or Envisaged to Implement the Convention in Brazil

### **4. Description of activities, duties and responsibilities**

- Elaboration of the report on national circumstances
- Elaborate a report about the National and Regional Development Priorities.
- Elaborate a report about Existing Institutional Arrangements Relevant to the Preparation of the Inventory on a Continuing Basis.
- Elaborate a report about Special Circumstances, including the Special Needs and Concerns Arising from the Adverse Effects of Climate Change and/or of the Implementation of Response Measures.
- Elaborate the description of the steps taken or envisaged to implement the Convention in Brazil
- Describe programs containing measures to mitigate climate change implemented or been elaborated in Brazil. This activity will build on a baseline activity financed by the Government of Brazil whereby, based on available information, national programmes and actions to mitigate climate change are prioritized and subject to monitoring and reporting at national level.
- Describe programs implemented or been elaborated in Brazil containing measures to facilitate adequate adaptation to climate change.
- Describe other information considered relevant to the achievement of the objective of the Convention in Brazil, regarding transfer of technologies; research and systematic observation; . education, training and public awareness; capacity building activities and, information and networking related to climate change.
- Describe constraints and gaps, and related financial, technical and capacity needs in Brazil.

5. Expected Outputs: Fulfillment of activities described above

6. Professional Qualifications

- . University Degree;
  - . Professional experience of at least 4years, with specific experience in the field of climate change of at least 2 years;
  - . Participation in course or seminar related to climate change;
  - . Participation in international negotiations;
  - . Excellent writing skills in Portuguese (native tongue);
  - . Fluency in English desirable.
7. Responsible to: Elaborate the report on National Circumstances and the description of the steps taken or envisaged to implement the Convention in Brazil
  8. Place of Work: To be defined
  9. Duration: To be defined
  10. Salary Category: To be defined
  11. Budget Line: GEF

#### **Terms of Reference No. 42**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Web Designer

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

Output 4.1.2 Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the national GHG inventory results in accordance with the initial national communication.

**04. Description of activities, duties and responsibilities**

- Up date the web site of the Ministry of Science and Technology with information concerning climate change and national GHG inventory

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications:

- . University degree in Computer Engineering and/or Computer Network;
- . Professional experience of at least 3 years;
- . Course of Web Developer and PHP in MySQL;
- . English desirable.

07. Responsible to: Web designer

08. Place of Work: To be defined

09. Duration: To be defined.

10. Salary Category: To be defined

11. Budget Line: GEF

**Terms of Reference No. 43**

Number and Project Title: BRA/---/---- Second National Communication of Brazil to the UNFCCC

**01. Title :** Implementation of Quality Control and Quality Assurance Procedures

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to

meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1". In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil's First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 1.2.1 Establish Quality Control and Quality Assurance Procedures

#### **04. Description of activities, duties and responsibilities**

- Develop and Implement a Quality Control Pilot Plan.  
The Quality Control Plan will consist of a system of routine technical activities, that the Ministry of Science and Technology, responsible for the implementation of this project, will implement through its climate change "country team", to perform routine and consistent checks to ensure data integrity, correctness, and completeness; identify and address errors and omissions; and document and archive inventory material in order to measure and control the quality of the inventory as it is being developed. QC activities will include general methods such as accuracy checks on data acquisition and calculations and the use of approved standardized procedures for emission calculations, measurements, estimating uncertainties, archiving information and reporting.
- Develop and Implement Quality Assurance Procedures  
Once the inventory is finalized, QA activities will be performed, including a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process. The Ministry of Science and Technology intends to promote a peer review of the inventory estimates, based on the procedure used by the IPCC in its report reviews. This procedure was used in the FNC, regarding the "Steps taken or envisaged to implement the UNFCCC in Brazil", and it was considered successful.

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications
- . University degree
  - . Experience in the object area
  - . English desirable

07. Responsible to: Implementation of Quality Control and Quality Assurance Procedures
08. Place of Work: To be defined
09. Duration: To be defined
10. Salary Category: To be defined
11. Budget Line: GEF
12. **Observation: Will be necessary four members for the staff**

#### **Terms of Reference No. 44**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Consultant on Public Awareness and Education Strategy

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 4.1.2 Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the national GHG inventory results in accordance with the initial national communication.

### **04. Description of activities, duties and responsibilities**

- Feed information concerning climate change and national GHG inventory in English to the web site of the Ministry of Science and Technology

05. Expected Outputs. Fulfillment of activities described above

06. Professional Qualifications

. Professional experience of at least 4 years, with specific experience in the field of climate change desirable;

. Excellent writing skills in English (native tongue);

. Fluency in Portuguese desirable.

. University degree.

07. Responsible to: Web information in English

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line : GEF

### **Terms of Reference No. 45**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Consultant on Public Awareness and Education Strategy

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 4.1.2 Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the national GHG inventory results in accordance with the initial national communication.

### **04. Description of activities, duties and responsibilities**

- Feed information concerning climate change and national GHG inventory in Portuguese and English to the web site of the Ministry of Science and Technology

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . Professional experience of at least 4 years, with specific experience in the field of climate change desirable;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English, with excellent writing skills.
- . University degree.

07. Responsible to: Web information in Portuguese and English

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line: GEF

### **Terms of Reference No. 46**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Consultant on Public Awareness and Education Strategy

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 4.1.2 Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the national GHG inventory results in accordance with the initial national communication.

### **04. Description of activities, duties and responsibilities**

- Feed information concerning climate change and national GHG inventory in Spanish to the web site of the Ministry of Science and Technology

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

. Professional experience of at least 4 years, with specific experience in the field of climate change desirable;

. Excellent writing skills in Spanish (native tongue);

. Fluency in Portuguese desirable.

07. Responsible to: Web information in Spanish

08. Place of Work: To be defined
09. Duration: To be defined
10. Salary Category: To be defined
11. Budget Line. GEF

### **Terms of Reference No. 47**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Consultant on Public Awareness and Education Strategy

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

Output 4.1.2 Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the national GHG inventory results in accordance with the initial national communication.

**04. Description of activities, duties and responsibilities**

- Feed information concerning climate change and national GHG inventory in French to the web site of the Ministry of Science and Technology
05. Expected Outputs: Fulfillment of activities described above
06. Professional Qualifications
- . Professional experience of at least 4 years, with specific experience in the field of climate change desirable;
  - . Excellent writing skills in French (native tongue);
  - . Fluency in Portuguese desirable.
07. Responsible to: Web information in French
08. Place of Work: To be defined
09. Duration: To be defined
10. Salary Category: To be defined
11. Budget Line: GEF

**Terms of Reference No. 48**

**Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC**

**01. Title :** Consultant in Climate Change and Inventory

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

Output 1.1.1 Inventory for the Energy Sector elaborated

**04. Description of activities, duties and responsibilities**

- Analyze the results on the GHG emissions inventory in energy sector
- Coordinate the inventory for the energy sector

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . University Degree;
- . Professional experience of at least 5 years, with specific experience in the field of climate change of at least 2 years;
- . Participation in international negotiations in the field of climate change;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English; knowledge of other language desirable.

07. Responsible to: Project Coordination on Inventory for the Energy Sector

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line: GEF

**Terms of Reference No.49**

Number and Project Title: BRA/---/---- Second National Communication of Brazil to the UNFCCC

**01. Title :** Consultant in Climate Change and Inventory

**02. Background.** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the

implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Output 1.1.2 Inventory for the Industry Sector elaborated

Output 1.1.5 Inventory for the Waste Sector

### **04. Description of activities, duties and responsibilities**

- Analyze the results on the GHG emissions inventory in the industry sector
- Coordinate the inventory for the industry sector
- Analyze the results on the GHG emissions inventory in the waste sector
- Coordinate the inventory for the waste sector

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . University degree (completed);
- . Professional experience of at least 5 years, with specific experience in the field of climate change of at least 2 years;
- . Participation in international negotiations in the field of climate change;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English; knowledge of other language desirable.

07. Responsible to: Project Coordination on Inventory for the Industry Sector and Waste Sector

08. Place of Work: To be defined
09. Duration: To be defined
10. Salary Category: To be defined
11. Budget Line: GEF

### **Terms of Reference No. 50**

Number and Project Title: BRA/---/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Consultant in Climate Change and Inventory

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

- . Output 1.1.3 Inventory for the Agricultural Sector elaborated
- . Output 1.1.4 Inventory for the Land-Use Change and Forestry Sector elaborated

**04. Description of activities, duties and responsibilities**

- Analyze the results on the GHG emissions inventory in the agricultural sector
- Coordinate the inventory for the agricultural sector
- Analyze the results on the GHG emissions inventory in the land-use change and forestry sector
- Coordinate the inventory for the land-use change and forestry sector

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . University degree (completed);
- . Professional experience of at least 5 years, with specific experience in the field of climate change of at least 2 years;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English; knowledge of other language desirable.

07. Responsible to: Project Coordination on Inventory for the Agricultural Sector and Land-Use Change and Forestry Sector

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line : GEF

**Terms of Reference No. 51**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Project Inventory Coordinator

**02. Background.** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

Outcome 1.1 Preparation of National Inventory Refinement

Outcome 1.2 Establishment of a National Structure for the Estimation of Greenhouse Gas Emissions

**04. Description of activities, duties and responsibilities**

- Analyze the results on the GHG emissions inventory in all the sectors described in the outputs
- Analyze the results of the quality control
- Coordinate all the activities related to the National Inventory Gas and National Structure for the Estimation of Greenhouse Gas Emissions

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications

- . Master's degree;
- . Professional experience of at least 6 years, with specific experience in the field of climate change of at least 4 years;
- . Experience in preparing and implementing international projects;
- . Participation in international negotiations in the field of climate change;
- . Experience in project coordination;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English; knowledge of other language desirable.

07. Responsible to: Project Inventory Coordination

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line: GEF

## Terms of Reference No. 52

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Project Vulnerability and Adaptation Coordinator

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

### **03. Related Results of Project Document**

Outcome 2.1 Regional Modeling of Climate and Climate Change Scenarios

Outcome 2.2 Vulnerability and Adaptation Research and Studies Concerning Strategic Sectors that are vulnerable to the Impacts Associated with Climate Change in Brazil Carried Out

### **04. Description of activities, duties and responsibilities**

- Analyze the results on the regional modeling of climate and climate change scenarios
- Analyze the results on vulnerability and adaptation research and studies
- Coordinate all the activities related to the Regional Modeling of Climate and Climate Change Scenarios
- Coordinate all the activities related to the Vulnerability and Adaptation Research and Studies

05. Expected Outputs: Fulfillment of activities described above

06. Professional Qualifications
  - . Master's degree;
  - . Professional experience of at least 6 years, with specific experience in the field of climate change of at least 4 years;
  - . Experience in preparing and implementing international projects;
  - . Participation in international negotiations in the field of climate change;
  - . Experience in project coordination;
  - . Excellent writing skills in Portuguese (native tongue);
  - . Fluency in English; knowledge of other language desirable.
07. Responsible to: Project Vulnerability and Adaptation Coordination
08. Place of Work: To be defined
09. Duration: To be defined
10. Salary Category: To be defined
11. Budget Line : GEF

### **Terms of Reference No. 53**

Number and Project Title: BRA/----/----- Second National Communication of Brazil to the UNFCCC

**01. Title :** Implementation of the UNFCCC and Public Awareness Project Coordinator

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.

Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.

The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

Output 3.1 Elaborate a report on National Circumstances

Output 3.2 Describe the Steps Taken or Envisaged to Implement the Convention in Brazil

Outcome 4.1 Spread of information, publications of documents, organization and participation in events related to climate change issues

Outcome 5.1 Publish Brazilian Second National Communication

**04. Description of activities, duties and responsibilities**

- Analyze the report on National Circumstances
- Analyze the description of the steps taken or envisaged to implement the Convention in Brazil
- Coordinate the elaboration of the National Circumstances
- Coordinate the description of the steps taken or envisaged to implement the Convention in Brazil
- Coordinate the spread of information, publications of documents, organization and participation in events related to climate change issues
- Coordinate the editing and publishing of the Brazilian Second National Communication

**05. Expected Outputs:** Fulfillment of activities described above

06. Professional Qualifications

- . Master's degree;
- . Professional experience of at least 6 years, with specific experience in the field of climate change of at least 2 years;
- . Experience in preparing and implementing international projects;
- . Participation in international negotiations in the field of climate change;
- . Experience in project coordination;
- . Excellent writing skills in Portuguese (native tongue);
- . Fluency in English; knowledge of other language desirable.

07. Responsible to: Project Implementation and Public Awareness Coordinator

08. Place of Work: To be defined

09. Duration: To be defined

10. Salary Category: To be defined

11. Budget Line: GEF

**Terms of Reference No. 54**

Number and Project Title: BRA/---/---- Second National Communication of Brazil to the UNFCCC

**01. Title :** General Project Coordinator

**02. Background:** The Brazilian Ministry of Science and Technology established the General Coordination on Global Changes in August, 1994. Its principal goal was to co-ordinate the implementation of the UNFCCC in Brazil and its initial main task was to develop the First National Communication, in accordance with the commitments undertaken under the Convention.

The First Climate Change Enabling Activity project began in June 1996 with external resources provided by GEF – Project “Enabling Brazil to Fulfill its Commitments to the United Nations Framework Convention on Climate Change”, according to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. In addition, financial resources were made available by means of a bilateral agreement with the United States of America, under the USCS Program. The Project has completed its activities in December 2000 and Brazil’s First National Communication was submitted on December 10th 2004, during the X Conference of the Parties to the UNFCCC.

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The development objective of the project is to prepare the Second National Communication of Brazil to the Conference of the Parties and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.

The project will be executed by the Ministry of Science and Technology through the General Coordination on Global Climate Change in close cooperation with national, regional and local partners.

**03. Related Results of Project Document**

All the results.

**04. Description of activities, duties and responsibilities**

- Coordinate the elaboration of the Inventory;
- Coordinate the strengthening of the national structure establish to estimate GHGs;
- Coordinate the elaboration of the Regional Modeling of Climate and Climate Change Scenarios;
- Coordinate the carry out / elaboration of vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil;
- Coordinate the elaboration of the National Circumstances
- Coordinate the description of the steps taken or envisaged to implement the Convention in Brazil
- Coordinate the spread of information, publications of documents, organization and participation in events related to climate change issues
- Coordinate the editing and publishing of the Brazilian Second National Communication

16. Expected Outputs: Fulfillment of activities described above
17. Professional Qualifications
  - . Master's degree;
  - . Professional experience of at least 10 years, with specific experience in the field of climate change of at least 6 years;
  - . Experience in preparing and implementing international projects;
  - . Participation in international negotiations in the field of climate change;
  - . Experience in project coordination;
  - . Excellent writing skills in Portuguese (native tongue);
  - . Fluency in English; knowledge of other language desirable.
18. Responsible to: General Project Coordinator
19. Place of Work: To be defined
20. Duration: To be defined
21. Salary Category: To be defined
22. Budget Line : GEF

### **PART III: Stakeholder Involvement Plan**

The development of the National Communication is a multidisciplinary effort, which involved in the FNC more than 150 institutions and 700 specialists from all regions of the country. Since the preparation of national communications is a continuing process, the second national communication will be built upon the lessons learnt from the first one. Therefore, in the SNC the same institutions and specialists will be involved and, furthermore, the involvement of new institutions and specialists will be sought.

Given the size and complexity of the project, the General Coordination on Global Climate Change of the Ministry of Science and Technology, responsible for the technical implementation of the project, will also be in charge of coordinating the activities that will be developed under the project, as well as monitoring and evaluation activities.

However, partnerships will be encouraged and enhanced with decentralized actions and the involvement of key partners, which are indispensable to the implementation of the program. The basic proposal for such implementation consists of the maintenance and strengthening of existing partnerships, increasing the effective capacity of the institutions with regard to climate change, and the establishment of new partnerships, especially in new areas not covered in the FNC. Some of the institutions to be involved will be in charge of coordinating specific outcomes or outputs in the SNC.

Because of its scope and level of detail, and taking into account that it will address the emissions of the principal GHGs (including CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, CO, HFC, NO<sub>x</sub>, CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, SF<sub>6</sub>) from the energy, industry, forestry, agriculture, and waste treatment sectors, the Brazilian inventory of anthropogenic GHG emissions not controlled by the Montreal Protocol will involve specialists in many disciplines from several ministries (Ministry of Mines and Energy - MME, of Environment -MMA, of Development, Industry, and Commerce -MDIC, etc.), federal institutions (Brazilian Petroleum, Inc. - Petrobras, Eletrobras, Brazilian Agriculture and Livestock Research Company - EMBRAPA, INPE, among others), state institutions (Environment Sanitation Agency - CETESB, Power Company of the State of Minas Gerais -Cemig, among others), sectoral associations (Brazilian Aluminum Association - ABAL, Brazilian Association of Consumer Gas Distributors - ABEGÁS, Brazilian Chemical Industry Association - ABIQUIM, Brazilian Paper and Pulp Association - Bracelpa, Sugar Cane, Sugar and Alcohol Producers Coop. - Copersucar, among others), NGOs (Foundation for Science, Technology and Space Applications - Funcate, José Bonifácio Foundation, among others), universities and research centers (Graduate Programs in Engineering of the Federal University of Rio de Janeiro - COPPE/UFRJ, USP, Federal University of Rio Grande do Sul -UFRS, among others). See more details in Part III (Management Arrangements) of the Project Document.

The project document was prepared in close collaboration and through consultations with many of the above mentioned institutions (such as the Brazilian Agriculture and Livestock Research Company - EMBRAPA, the National Institute for Space Research - INPE, the Brazilian Petroleum, Inc. - Petrobras, the Environment Sanitation Agency - CETESB, the Foundation for Space Research, Application and Technology - FUNCATE, the Graduate Programs in Engineering of the Federal University of Rio de Janeiro - COPPE/UFRJ, among others), which provided inputs for the identification of areas where further progress is necessary as well as elaborated the activities to be developed.

Considering the successful experience of the Brazilian Government Climate Change Site on the Internet ([www.mct.gov.br/clima](http://www.mct.gov.br/clima)), this tool will be extremely important to raise awareness as well to exchange information, as the most effective, transparent and low-cost approach to involve the appropriate stakeholders. The Internet site has strengthened the capacity of the coordinating agency and helped decentralize the preparation of the National Communication, enabling the total involvement of all the relevant institutions, regardless of their location, and establishing a formal channel to bring together and

disseminate information. Developed in four languages (Portuguese, Spanish, English, and French), the Brazilian climate change site goes beyond the Brazilian public, and has become a point of reference internationally, allowing Brazil to take part in the global debate around climate change.

#### **PART IV: Annexes**

Annex 1: Executive Summary

Annex 2: M&E Plan

Annex 2: Approved Concept (separate file)

Annex 3: Endorsement and Co-financing Letters

Annex 4: List of Stakeholders

ANNEX I



**PROJECT EXECUTIVE SUMMARY**  
**GEF COUNCIL SUBMISSION**  
**FULL SIZED PROJECT**

**AGENCY'S PROJECT ID:** PIMS no. 2613  
**GEFSEC PROJECT ID:** LEAVE BLANK  
**COUNTRY:** BRAZIL  
**PROJECT TITLE:** Second National Communication of Brazil to the UNFCCC  
**GEF AGENCY:** UNDP  
**OTHER EXECUTING AGENCY(IES):** Ministry of Science and Technology of Brazil  
**DURATION:** 3 YEARS  
**GEF FOCAL AREA:** Climate Change  
**GEF OPERATIONAL PROGRAM:** EA – Enabling Activity  
**GEF STRATEGIC PRIORITY:** CB1 – Capacity Building  
**Pipeline Entry Date:** 21 April 2005  
**ESTIMATED STARTING DATE:** August 2005  
**IA FEE:** USD\$ 306,000

FINANCING PLAN (US\$)	
GEF PROJECT/COMPONENT	
Project	3,400,000
PDF A	
PDF B	
PDF C	
<b>Sub-Total GEF</b>	
<b>Co-FINANCING*</b>	
UNDP	
Government	4,175,600
Bilateral Donors	
Other	
<b>Sub-Total Co-financing:</b>	<b>7,575,600</b>
<b>Total Project Financing:</b>	<b>7,575,600</b>
<b>FINANCING FOR ASSOCIATED ACTIVITIES IF ANY: N/A</b>	
<b>LEVERAGED RESOURCES IF ANY: N/A</b>	

**CONTRIBUTION TO KEY INDICATORS OF THE BUSINESS PLAN:**

Sequencing of response to Convention priorities and capacity building through Enabling Activities.

**RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT(S):**

Date of endorsement letter: September 5<sup>th</sup>, 2003

Endorsement letter signed by *Carlos Eduardo Lampert Costa, GEF Operational Focal Point, Brazilian Secretariat of International Affairs - SEAIN, Ministry of Planning, Budgeting and Management*

Approved on behalf of the *United Nations Development Programme*. This proposal has been prepared in accordance with GEF policies and procedures and meets the standards of the GEF Project Review Criteria for work program inclusion.

Yannick Glemarec  
 Deputy Executive Coordinator  
 Date: March 10, 2005

Ms. Catherine Vallée  
 Project Contact Person

## PROJECT SUMMARY

### *PROJECT RATIONALE, OBJECTIVE, OUTCOMES, AND OUTPUTS/ACTIVITIES.*

#### Rationale

1. Brazil is Party to the United Nations Framework Convention on Climate Change – UNFCCC. Developing country Parties have committed themselves to providing the UNFCCC with adequate information on the status of implementation of such obligations, as called for under Article 12.1. National communications are required to include the above mentioned inventory of net anthropogenic emissions of GHGs not included in the Montreal Protocol, and a general description of the steps taken or envisaged to implement the Convention.
2. According to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. The financial mechanism of the UNFCCC (Article 11) is the Global Environment Facility - GEF.
3. In the default scenario, without GEF intervention, climate change activities in Brazil would be limited to the financial resources allocated in the Brazilian budget, which would not be sufficient to allow the implementation of the UNFCCC in the country. The domestic resources available for such implementation are low. Furthermore, it would be difficult to maintain the Climate Change Program in Brazil, with the possibility of jeopardizing the progress already achieved in capacity building and institutional strengthening.
4. For additional information, see detailed Situation Analysis (UNDP Project Document Section I: Part I) and detailed Strategy (UNDP Project Document Section I: Part II).

#### Project goal, objective, outcomes, and outputs/activities

5. In order to ensure Brazil’s continued participation in and progress towards the implementation of the UNFCCC, it is necessary that a second enabling activity project be approved to assist Brazil in the preparation of its Second National Communication.
6. Although the initial national communication focused mainly on the preparation of a detailed inventory of GHG emissions and a general description of steps taken or envisaged to implement the Convention, the Second Enabling Activities Project is intended to enlarge the scale and scope of the activities to be undertaken, including vulnerability and adaptation assessment.
7. The immediate objective of the project is to prepare the Second National Communication of Brazil to the UNFCCC and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.
8. Therefore, this Enabling Activity project is envisaged comprising five objectives with related outcomes, outputs, activities and sub-activities (see detailed project attached).
9. Objective 1 is entitled “Preparation of National Inventory Refinement”. The objective of the second phase is to refine the Brazilian Inventory of Anthropogenic Emissions and Removals of Greenhouse Gases and to extend its coverage to the 1990 to 2000 period on an annual basis, as well as the strengthening of the national structure established for the estimation of GHG. It will focus on the sectors/gases that

have either a significant share of the emissions or present a large degree of uncertainty, or both, taking into consideration the efforts required to improve the estimates. The development of a national inventory is a resource-intensive undertaking and priorities were established for refining estimates of emissions only for the main sectors and gases, because the estimation methodology and data quality can improve with time. In this sense, the preliminary results of the First Brazilian Inventory have helped in selecting the priority research studies to be carried in this second phase.

10. Objective 1 has two Outcomes: Inventory Improvement and Extension carried out (Outcome 1.1) and Strengthening of the National Structure Established for the Estimation of Greenhouse Gas Emissions (Outcome 1.2).

11. Outcome 1.1 has five related outputs: Output 1.1.1 - Inventory for the Energy Sector elaborated (involving the activities: assess and improve the Energy Balance Information, improve and extend the Bottom-Up approach for GHG emissions estimation, improve knowledge of Brazilian specific energy transformation sectors, improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach, improve methodology and obtain and extend data for estimating fugitive emissions); Output 1.1.2 - Inventory for the Industry Sector elaborated (involving the activities: improve the assessment for the cement production sector, improve activity data and assessment for lime production, limestone and dolomite use sectors, improve activity data and assessment of iron and steel industry sector, improve activity data and assessment of chemical industry sector, improve activity data and assessment of the production and consumption of HFCs, PFCs and SF<sub>6</sub> sector); Output 1.1.3 - Inventory for the Agricultural Sector elaborated (involving the activities: improve country specific emission factors for livestock enteric fermentation and manure management sectors, improve the assessment of N<sub>2</sub>O emissions from agricultural soils, develop country specific emission factors for rice cultivation and improve and extend activity data, improve the assessment of CO, CH<sub>4</sub>, N<sub>2</sub>O and NO<sub>x</sub> emissions from agricultural residues burning, and improve the methodology and obtain and extend data to estimate emissions due to the prescribed burning of savannas); Output 1.1.4 - Inventory for the Land-Use Change and Forestry Sector elaborated (involving the activities: improve the assessment of emissions for the forest and grassland conversion sector, improve the assessment of emissions for the changes in forest and other woody biomass sector, improve activity data and assessment of emissions of the CO<sub>2</sub> emissions and removals from soils sector, and methane emissions from water reservoirs); Output 1.1.5 - Inventory for the Waste Sector elaborated (involving the activities: improve data and extend estimates for solid waste disposal sector, improve data and extend estimates for wastewater handling sector, and estimate the GHG emissions from waste incineration sector).

12. Outcome 1.2 has two related outputs: Output 1.2.1 - Establish Quality Control and Quality Assurance Procedures (involving two activities: develop and implement a quality control pilot plan, and develop and implement quality assurance procedures); Output 1.2.2 - Establish a Database for Activity Data and Emission Factors (involving one activity: develop a database for storing activity data and emission factors, keeping track of methodology and assumptions underlined in their establishment).

13. Objective 2 is entitled “Methodological Approach regarding Vulnerability Assessment and Adaptation Measures Elaborated” and has two Outcomes: Outcome 2.1 - Regional Modeling of Climate and Climate Change Scenarios Elaborated; and Outcome 2.2 - Vulnerability and Adaptation Research and Studies Concerning Strategic Sectors that are Vulnerable to the Impacts Associated with Climate Change in Brazil Carried Out.

14. Outcome 2.1 is related to the need for downscaling methods for Brazil that can be applied to the climate change scenarios based on global climate models, in order to give more detailed projections of climate with a higher spatial resolution than that provided by a global climate model. This Outcome has 4 related Outputs: analyze climate change scenarios for South America based on global climate change

models from the IPCC-Data Distribution Center (IPCC-DDC) for different SRES scenarios (provided by the IPCC-DDC); develop and improve the regional Eta/CPTEC model; develop and analyze climate-change downscaled scenarios for Brazil, making use of the new super computer being installed at the Center for Weather Forecasting and Climate Studies – CPTEC; and enable the specialists of the CPTEC/INPE (National Institute for Space Research) to develop capacity for climate modeling on longer time scales, and to develop capacity building in V&A.

15. Outcome 2.2 aims at developing a preliminary analysis of the impacts associated to climate change in key areas in accordance with Brazilian national circumstances, mainly in those areas that vulnerability is influenced by physical, social and economic factors. The initial goal is to analyze areas considered to be strategically relevant, where the impacts associated to climate change can be important to Brazil, and that could be studied independently while Brazilian future climate scenarios have not been concluded. This strategy would correspond to the steps “Assessing current vulnerability” and “Assessing future climate risks” of the Adaptation Policy Framework of the UNDP/GEF. However, further development of some results of this Outcome will depend on future results achieved in developing climate regional models (Outcome 2.1), which will provide more reliable scenarios for South America, in respect to the impacts of climate change either on mean surface temperature or on precipitation patterns. The selected areas are outlined in the six related Outputs of this Outcome: Output 2.2.1 – Report on Vulnerability and Adaptation in the Health Sector elaborated (including one activity: study the vulnerability to climate related diseases - such as malaria, leishmaniasis and cholera - and adaptation measures); Output 2.2.2 – Report on Vulnerability and Adaptation in the Energy Sector elaborated (including one activity: evaluate the vulnerability of the power sector and possible adaptation measures); Output 2.2.3 – Report on Vulnerability and Adaptation related to Water Resources, Floods and Desertification elaborated (including one activity: estimate the biophysical impacts of climate change on hydrologic resources in terms of water quantity – annual and seasonal distribution); Output 2.2.4 – Report on Vulnerability and Adaptation in the Agriculture elaborated (including one activity: study of the possible effects of climate change on the Brazilian agricultural sector); Output 2.2.5 – Report on Vulnerability and Adaptation in the Coastal Zone Management elaborated (including one activity: analyze the overall sea level rise in Brazil as a consequence of climate change); Output 2.2.6 – Report on Vulnerability and Biodiversity elaborated (including one activity: analyze the climate change effects on selected biodiversity aspects in Brazil, which is coral’s photo symbiotic organisms – coral bleaching); and Output 2.2.7 - Establish a Coordination between the elaboration of the Regional Modeling of Climate and Climate Change Scenarios and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil, as well as to the inventory of greenhouse gas emissions and removal (Outcome 1.1).

16. Objective 3 is entitled “Description of the Brazilian National Circumstances and the Steps Taken or Envisaged to Implement the Convention prepared” and has one Outcome 3: National circumstances analyzed and considered into planning; and two related Outputs: Output 3.1 - Elaborate a Report on National Circumstances (including the activities: elaborate a report about the National and Regional Development Priorities; elaborate a report about existing institutional arrangements relevant to the preparation of the inventory on a continuing basis, including the development of some indicators to assess the sustainability of the national communication process in the long run, and a report about special circumstances, including the special needs and concerns arising from the adverse effects of climate change and/or of the implementation of response measures); and Output 3.2 - Describe the Steps Taken or Envisaged to Implement the Convention in Brazil (including the activities: describe programs containing measures to mitigate climate change implemented or been elaborated in Brazil, describe programs implemented or been elaborated in Brazil containing measures to facilitate adequate adaptation to climate change, and describe other information considered relevant to the achievement of the objective of the Convention in Brazil, regarding transfer of technologies, research and systematic observation, education, training and public awareness, capacity building activities and, information and networking related to

climate change described). The description of steps taken or envisaged to implement the Convention in Brazil will be prepared in accordance with Article 4.1 of the Convention and with the UNFCCC Decision 17/CP.8.

17. Objective 4 is entitled “Public Awareness and Education Strategy in place” and aims at building institutional capacity in Brazil for promoting and cooperating in education, training and public awareness related to climate change. This Objective has one related Outcome: Outcome 4.1 – Spread of information, publications of documents, organization and participation in events related to climate change issues. This Outcome involves two Outputs: Output 4.1.1 - Publish documents and reports related to the issue elaborated especially by the IPCC, the UNFCCC Secretariat and also by the project itself and by other relevant institution; and Output 4.1.2 Make available in the web site of the Ministry of Science and Technology updated information concerning climate change issues, as well as the updated national GHG inventory.

18. Objective 5 is entitled “Preparation of the Second National Communication”. The objectives previously described, especially the objectives 1, 2 and 3, are related to the components of the national communication. Therefore, the envisaged outcome for this objective includes translating, editing and publishing the final report of the Second National Communication, in order to submit it to the UNFCCC. This Objective has one Outcome 5.1 - Publish Brazilian Second National Communication in English and Portuguese. This draft final version of the Second National Communications will be also submitted to the GEF to finalize project activities.

See Logical Framework matrix in UNDP Project Document Section II: Part II.

#### Project strategy and approach

19. The strategy proposed by the Brazilian government for its First National Communication was to give priority to the preparation of the Brazilian inventory of GHG emissions and removals. The First Enabling Activity Project allowed Brazil to assess the emissions by sources and removals by sinks from the energy, agriculture and livestock, industry, land use change and forestry, and waste treatment sectors, identifying the most important sources and sinks.

20. The Second National Communication of Brazil – considering the capacity acquired by the institutions and specialists involved – can enhance and extend the studies on activity data and emission factors related to such categories and also regarding sectors that involve a high degree of uncertainty, considering the lack of emission factors and/or activity data (savanna burning, waste, soil carbon emissions and, planted forests emissions/uptake). Priorities for the Second National Inventory were then set taking in consideration these results together with an assessment of the feasibility and cost/benefit of each research activity proposed.

21. Moreover, in this second stage special attention will be given to studies on vulnerability to climate change impacts. Initial studies on strategic areas, in accordance with Brazilian national circumstances, will be emphasized. Another relevant aspect will be to further develop activities regarding dissemination of information and publication of documents related to climate change.

22. For additional information, see UNDP Project Document Section I: Part II.

#### ***KEY INDICATORS, ASSUMPTIONS, AND RISKS***

##### Indicators

23. Overall, indicators in this Enabling Activity project reflect the achievement of expected results. Regarding Outcome 1.1 (Inventory Improved and Extension carried out), the key indicator is 1 (one) national inventory elaborated. Regarding Outcome 2.1 (Regional Modeling of Climate and Climate Change Scenarios Elaborated), the key indicator is 1 (one) model conception finished and implementation running. Regarding Outcome 2.2 (Vulnerability and Adaptation Research and Studies Concerning Strategic Sectors that are Vulnerable to the Impacts Associated with Climate Change in Brazil carried out), the key indicator is 1 (one) report elaborated. Regarding Objective/Outcome 3 (Description of the Brazilian National Circumstances and Steps Taken or Envisaged to Implement the Convention prepared), the key indicator is 1 (one) report elaborated. Regarding Objective/Outcome 4 (Public Awareness and Education Strategy in place), the key indicator is 1 (one) general public awareness and education strategy in place. Regarding Objective/Outcome 5 (Preparation of the Second National Communication), the key indicator is 1 (one) Brazilian Second National Communication finalized.

24. For additional information, see UNDP Project Document Section II: Part II.

#### Assumptions

25. Taking into account the work that had been developed in the preparation of the FNC and experience acquired, it is assumed that all the reports and studies to be prepared under this project will be completed as soon as possible with the highest quality possible, with the supervision of the General Coordination on Global Climate Change of the Ministry of Science and Technology, responsible for the technical implementation of the project, as well as for monitoring and evaluation activities.

26. Regarding Outcome 1.1 (Inventory Improved and Extension carried out), the main assumption is the existing capacity to improve and extend the inventories. Regarding Outcome 2.1 (Regional Modeling of Climate and Climate Change Scenarios Elaborated), the main assumption is the existing capacity to model and the time of supercomputer allocated for running the model. Regarding Outcome 2.2 (Vulnerability and Adaptation Research and Studies Concerning Strategic Sectors that are Vulnerable to the Impacts Associated with Climate Change in Brazil carried out), the main indicator is the existing capacity to carry out the studies related to this outcome. Regarding Objective/Outcome 3 (Description of the Brazilian National Circumstances and Steps Taken or Envisaged to Implement the Convention prepared), the main assumption is existing reports related to this outcome that must be compiled. Regarding Objective/Outcome 4 (Public Awareness and Education Strategy in place), the main assumption is existing information to be made available. Regarding Objective/Outcome 5 (Preparation of the Second National Communication), the main assumption is that, at the time of its finalization, the background reports will be completed.

#### Risks

27. Regarding Outcome 1.1 (Inventory Improved and Extension carried out), the main risk is the delay in the preparation of reports. Regarding Outcome 2.1 (Regional Modeling of Climate and Climate Change Scenarios Elaborated), the main risks are delay and modeling problems. Regarding Outcome 2.2 (Vulnerability and Adaptation Research and Studies Concerning Strategic Sectors that are Vulnerable to the Impacts Associated with Climate Change in Brazil carried out), the main risk is the delay in carrying out the studies related to this outcome. Regarding Objective/Outcome 3 (Description of the Brazilian National Circumstances and Steps Taken or Envisaged to Implement the Convention prepared), the main risk is the delay in preparing the report. Regarding Objective/Outcome 4 (Public Awareness and Education Strategy in place), the main risk is the delay in carrying out the related outputs. Regarding Objective/Outcome 5 (Preparation of the Second National Communication), the main risk is the delay in the finalization of the Second National Communication.

28. Taking into account the work that had been developed in the preparation of the FNC and experience acquired, the risks can be considered low.

## **COUNTRY OWNERSHIP**

### ***COUNTRY ELIGIBILITY***

29. Brazil was the first signatory Party to the UNFCCC. The Convention was signed by Brazil on June 4th, 1992 and ratified by Congress, in accordance with the National Constitution, by means of the Decree no.1 of February 28th, 1994. The Convention entered into force for Brazil on May 29th, 1994, 90 days after its ratification by the National Congress.

30. Developing country Parties have committed themselves to providing the UNFCCC with adequate information on the status of implementation of such obligations, as called for under Article 12.1. National communications are required to include the above mentioned inventory of net anthropogenic emissions of GHGs not included in the Montreal Protocol, and a general description of the steps taken or envisaged to implement the Convention.

31. According to Article 4.3 of the UNFCCC, “the developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1”. The financial mechanism of the UNFCCC (Article 11) is the Global Environment Facility - GEF.

32. This project has been prepared according to UNFCCC guidelines for National Communications (the project brief is in accordance with Decision 17/CP. 8 - guidelines for the preparation of national communications from Parties not included in Annex I to the Convention) and, therefore, fits in Enabling Activities strategies of the GEF.

### ***COUNTRY DRIVENNESS***

33. The actions related to climate change that have been undertaken in the country emerged after Brazil’s ratification of the UNFCCC in February 1994. The action plan was defined by the Brazilian Government, and especially by the Ministries of Science and Technology and of External Relations, in order to meet the initial commitments of Brazil under the Convention.

34. The strategy proposed by the Brazilian government was to give priority to the work on the Brazilian inventory of anthropogenic GHG emissions, which would have a dual objective – diagnosis of the current situation and focus on the main initial commitment under the Convention. The strategy adopted was to concentrate on the inventory in the first phase. There was also the intention that the strategy for the inventory preparation be as comprehensive as possible in terms of gases and sectors analyzed and provide for the creation of endogenous capacity in the country. The capacity acquired by the institutions and specialists involved in the first phase will assist the implementation of future mitigation, adaptation and vulnerability plans, which are also commitments set out in the Convention. Another relevant aspect was the development of climate change education and awareness-raising activities, given the limited amount of information existing in Brazil about the issue, and especially the small number of publications in Portuguese.

35. Moreover, Brazil has always sought to play a leading role in the arena of global environmental issues, following the example of the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992. Therefore, since the beginning of the activities related to climate change in

Brazil, institutions have been created to deal with this issue and to implement the Convention in the country, as such the General Coordination on Global Changes at the Ministry of Science and Technology, the Inter-ministerial Commission on Global Climate Change, and the Brazilian Forum on Global Climate Change.

## **PROGRAM AND POLICY CONFORMITY**

### ***FIT TO GEF OPERATIONAL PROGRAM AND STRATEGIC PRIORITY***

36. This project has been prepared according to UNFCCC guidelines for National Communications (the project brief is in accordance with Decision 17/CP. 8 - guidelines for the preparation of national communications from Parties not included in Annex I to the Convention) and, therefore, fits the GEF Operational Program for Enabling Activities and the GEF Strategic Priority for Capacity Building (CB-1).

37. See UNDP Project Document Section I: Part II for more details.

### ***SUSTAINABILITY (INCLUDING FINANCIAL SUSTAINABILITY)***

38. The Climate Change Program included in the Multiannual Plan - PPA is a sign that the Brazilian Government is concerned with climate change. Nevertheless, the budget is still too limited, considering that the Government cannot override national priorities, especially regarding social development.

39. A second phase of the Climate Change Program under the PPA started in 2004 and will be completed in 2007. The resources provided by the PPA will be complementary in nature and will enable Brazil to continue its efforts towards the implementation of the Convention, allowing for the continued implementation of some activities financed by the federal budget under the co-ordination of MCT, and especially keeping the climate change office operational. It is expected that this Program be held in continuous basis, and that, gradually, in the future, the costs of the UNFCCC implementation in the country be fully incorporated into the national budget.

40. As the project design draws from over 5 years of successful partnerships between the Brazilian Government and UNDP technical cooperation projects in climate change activities, there is strong indication of the technical and financial sustainability of the project. The comprehensive involvement of stakeholders and the high level of participation in consultations on project design also indicate the strong social sustainability of the proposal. Strategic partnerships among stakeholders in many sectors, in a decentralized process, guarantees the compliance of project proponents with the principle of participatory planning and execution arrangements, necessary for the sustainability of a long-term climate change strategy.

41. Some institutions that worked in the preparation of the FNC have already allocated human and financial resources for the development of climate change related activities. With a larger number of institutions involved in this SNC, it is expected more capacity building (including staff trained) is expected, as well as the enhancement of research on climate change in Brazil, particularly in areas where few researchers have been working. **Institutional strengthening is also expected to occur**, not only of governmental institutions, but of all stakeholders involved in the preparation of the SNC.

42. From the point of view of environmental sustainability, the results of the project, especially regarding inventory and vulnerability and adaptation assessment, will provide methodological references that will be important for the formulation of future CDM and adaptation projects, as well as important inputs for the scientific literature assessment review periodically undertaken by IPCC. **It should be noted that CDM related activities will not be funded by GEF under this project.**

43. For additional information, see UNDP Project Document Section I: Part II.

#### ***REPLICABILITY***

44. Taking into account the great area of the country and its regional diversities, in order to produce emission estimates with a sufficient level of accuracy, ample local research should be conducted. The general strategy is to use whatever information is available, and at the same time put in place research programs to improve the knowledge of the problem and the data at hand. These programs are usually composed of several phases, in order to provide better quality information at intermediate points. The idea is to have a permanent research program in place involving as many research institutes, universities and sectoral associations as possible.

45. Because of the importance of the *forest and grassland conversion and abandonment of managed lands* sector in the overall Brazilian emissions and the unreliability of default and international data, a large local project has been established. The results obtained so far are reliable but together with the area converted it is necessary to estimate the biomass content. These data are extremely variable for different regions and even for different parts of the Amazonian forest. It is expected that the SNC could enhance and extend the studies on activity data and emission factors related to sectors that involve a high degree of uncertainty, considering the lack of emission factors and/or activity data (savanna burning, waste, soil carbon emissions and, planted forests emissions/uptake), which will facilitate inventory preparation and ensure more reliable results in the future.

46. Studies being undertaken in Brazil to estimate methane emissions from hydroelectric power plants reservoirs and savanna burning are pioneer in the world and could enhance future methodology development. Other countries will profit from emission factors developed by the Brazilian SNC regarding renewable energy, such as alcohol, charcoal and biodiesel use. In addition, the expected output regarding the development of a regional climate change model by the CPTEC could enhance knowledge on this area, generating detailed climate predictions, including climate change. Predictions using regional climate models will thus lead to a substantial improvement in the assessments of Brazil's vulnerability to climate change and how the country can adapt to it.

47. For additional information, see UNDP Project Document Section I: Part II.

#### ***STAKEHOLDER INVOLVEMENT***

48. The development of the National Communication is a multidisciplinary effort, which involved in the FNC more than 150 institutions and 700 specialists from all regions of the country. Since the preparation of national communications is a continuing process, the second national communication will be built upon the lessons learnt from the first one.

49. Partnerships will be encouraged and enhanced with decentralized actions and the involvement of key partners, which are indispensable to the implementation of the program. The basic proposal for such implementation consists of the maintenance and strengthening of existing partnerships, increasing the effective capacity of the institutions with regard to climate change, and the establishment of new partnerships, especially in new areas not covered in the FNC. Some of the institutions to be involved will be in charge of coordinating specific outcomes or outputs in the SNC. See more details in Part III (Management Arrangements) of the Project Document.

50. Because of its scope and level of detail, and taking into account that it will address the emissions of the principal GHGs (including CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, CO, HFC, NO<sub>x</sub>, CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, SF<sub>6</sub>) from the energy, industry,

forestry, agriculture, and waste treatment sectors, the Brazilian inventory of anthropogenic GHG emissions not controlled by the Montreal Protocol will involve specialists in many disciplines from several ministries, federal institutions, state institutions, sectoral associations, NGOs, universities and research centers, among others.

51. The project document was prepared in close collaboration and through consultations with many institutions, which provided inputs for the identification of areas where further progress is necessary as well as elaborated the activities to be developed.

52. For additional information, see UNDP Project Document Section I: Part II.

### ***MONITORING AND EVALUATION***

53. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF.

54. For additional information, see UNDP Project Document (Annex I) M&E Plan and Budget for FSP.

## **FINANCIAL MODALITY AND COST EFFECTIVENESS**

### ***FINANCIAL MODALITY***

55. GEF will provide US\$ 3,400,000 and Brazil will provide US\$ 4,175,000 as co-financing.

56. The main source of co-financing to this project comes from the Federal Government and has already been approved in the Multi-annual Plan. It should be noted that National Institute for Space Research (INPE) is a subsidiary body of the Ministry of Science and Technology - MCT and, therefore, is abide by the determination of such a Ministry. Negotiations were already finalized for the use of INPE's inputs.

**Table 1. Detailed description of estimated co-financing sources**

<b>Co-financing Sources</b>				
<b>Name of Co-financier (source)</b>	<b>Classification</b>	<b>Type</b>	<b>Amount (US\$)</b>	<b>Status</b>
National Institute for Space Research - INPE	Governmental	Goods and services (satellite images)	2,500,000	approved in the Federal Government Multiannual Plan (PPA)
Ministry of Science and Technology - MCT	Governmental	Goods and Services	1,675,600	approved in the Federal Government Multiannual Plan (PPA)
<b>Sub-Total Co-financing</b>			<b>4,175,600</b>	

### ***COST EFFECTIVENESS***

57. The initial design has been identified in order to obtain the intended Outcomes in a cost-effective manner. The design includes specific outputs to be built upon experience and data of the First National Communication, for instance, the establishment of a database for activity data and emission factors. A second level of cost-effectiveness is achieved by working at the institutional level, with multiple sectors, based on national capacities.

58. Cost-effectiveness is also achieved as existing institutional and infrastructural resources are used in order to maximize gains and minimize costs to the GEF. The proposed implementation strategy involves a number of institutions and will facilitate sectoral involvement without the need to create new structures, experiences obtained throughout the process of the FNC are an asset for cost-effectiveness issues.

## **INSTITUTIONAL COORDINATION AND SUPPORT**

### ***CORE COMMITMENTS AND LINKAGES***

59. This project is in line with the Country Cooperation Framework 2002-06 that establishes that UNDP/Brazil will continue to play a major role in designing strategies for local capacity development, ensuring sustainability of institutions, mechanisms, structures and communities working for environmental issues.

60. UNDP Brazil has provided technical cooperation under GEF Enabling activities for both the Convention on Biological Diversity and the UNFCCC. Within the Climate Change focal area, UNDP GEF ongoing portfolio includes the Hydrogen Fuel Cell Buses for Urban Transport Project with MME; the Biomass Power Generation: Sugar Cane Bagasse and Trash with MCT; among others.

61. Moreover, the UNDP Brazil provides technical cooperation to Eletrobras in the execution of the National Rural Electrification Program - "Luz no Campo" and the Energy Efficiency Program conducted at national level and co-funded by the International Bank for Reconstruction and Development (IBRD) and GEF. Also with Eletrobras, as executing agency, support is given to the National Energy Conservation Program (PROCEL).

62. UNDP also works closely with MCT and ANEEL in the execution of the Power Sector Capacity Building on Climate Change Project and the Regulating the Brazilian Power Sector Program. Under the execution of MME, UNDP is also a partner in the implementation of the National Program for the Energy Development of States and Municipalities (PRODEEM).

63. For additional information, see UNDP Project Document Section I: Part I (Situation) and Part II (Strategy).

### ***CONSULTATION, COORDINATION AND COLLABORATION BETWEEN IAS, AND IAS AND EXAS***

64. Close co-ordination among GEF implementing agencies will be promoted at the country level to ensure that lessons learnt from relevant GEF projects will be enriched by effective information exchange.

### ***PROJECT IMPLEMENTATION ARRANGEMENT***

65. The coordination of the implementation in the country of commitments resulting from the UNFCCC and related actions at the federal level is performed by the Ministry of Science and Technology (MCT), through its General Coordination on Global Climate Change, which has been responsible for such activities since 1994. Therefore, as during the First Enabling Activity, the current project will be coordinated by the General Coordination on Global Climate Change, which will be responsible for involving relevant institutions and specialists from all regions of the country, considering the multidisciplinary characteristic of its activities. The sub-coordination of the activities will be based in the leading roles of the institutions and specialists in each field in the country, taking into account also the previous experience related with climate change acquired during the First Enabling Activity.

66. For additional information, see UNDP Project Document Section I: Part III.

**Annex A: Incremental Cost Matrix** – Not applicable for this EA project

<b>Cost/Benefit</b>	<b>Baseline (B)</b>	<b>Alternative (A)</b>	<b>Increment (A-B)</b>
<b>Domestic Benefits</b>			
<b>Global Benefits</b>			
<b><u>Costs</u> Outcome 1</b>			
<b>Outcome 2</b>			
<b>Outcome etc.</b>			
<b>Cost Totals</b>			

**Annex B: Logical Framework Analysis****Table 1: Objectively Verifiable Impact Indicators**

Project Strategy	Objectively verifiable indicators				
<b>Goal</b>	Ensure Brazil's continued participation in and progress towards the implementation of the UNFCCC, assisting the country in the preparation of its Second National Communication.				
<b>Immediate Objective</b>	To prepare the Second National Communication of Brazil to the UNFCCC and carry out studies on vulnerability and adaptation measures, develop regional modeling of climate and climate change scenarios, and build institutional capacity for implementing the Convention in Brazil.				
	Indicator	<u>Baseline</u>	<u>Target</u>	Sources of verification	Risks and Assumptions
<b>Outcome 1</b>	1 (one) national inventory elaborated by the end of the project	0	1	GHG inventory published	Delay Existing capacity
<b>Outcome 2</b>	1 (one) model conception finished and implementation running by the end of the project	0	1	First run report	Delay/Modeling problems Existing capacity/Time allocated for running
	1 (one) report elaborated by the end of the project	0	1	Report of studies of V&A published	Delay Existing capacity
<b>Outcome 3</b>	1(one) report elaborated by the end of the project	0	1	Report of Description of steps taken or envisaged published	Delay Existing reports
<b>Outcome 4</b>	1 (one) general public awareness and education strategy in place by the end of the project	0	1	Website updated, reports and booklets published	Delay Existing information
<b>Outcome 5</b>	1 (one) Brazilian Second National Communication finalized by the end of the project	0	1	Brazilian Second National Communication published	Delay Existing reports

**Annex C: Response to Project Reviews**

- a) GEF Secretariat and other Agencies' comments and IA/ExA response

<b>GEFSEC Comment for Work Program Inclusion</b>	<b>Response</b>	<b>Location where document was revised (sections, paragraphs)</b>
Country Drivenness: GEF Operational Focal Point endorsement	Letters of GEF Operational Focal Point and UNFCCC Focal point attached to the PRODOC.	Letters of Endorsement and Co-financing of PRODOC p. 141.
Program Designation and Conformity: Provide detailed budget	Budget detailed on Concept Document (which is part of the PRODOC as an Annex). PRODOC budget includes those costs.	Revised in Concept Document p. 53-56 and PRODOC budget on p. 35-36.
Sustainability: Require proxy indicators for inclusion of these costs into national budget.  Include indicators to track the stakeholder involvement and institutional capacity created.	<p>The issue of indicators was revised into the Concept Document.</p> <p>About the resources into national budget, it should be mentioned that a second phase of the Climate Changes Program under PPA started in 2004 and will be completed in 2007. The PPA (Multi-Annual Plan) is the main indicator that resources were assigned within national budget.</p> <p>Some institutions that worked in the preparation of the FNC have already allocated some human and financial for the development of climate change related activities. With the enlargement of the number of institutions involved in this SNC, it is expected more capacity building (including staff trained) and the enhancement of research on climate change in Brazil, particularly in areas where few researchers have been working. It is expected institutional strengthening not only of governmental institutions, but of all stakeholders involved in the preparation of the SNC.</p> <p>Further indicators will be developed during SNC implementation, as per M&amp;E plan (Annex 1 of PRODOC)</p>	Concept Document - p. 49-50; Executive Summary - p. 8; Project Document - p. 14-15

Replicability: Indication of countries that have expressed interest in using the output of Brazil's research.	Southern Cone countries do not have proper models to generate detailed climate predictions, including climate change. Thus, South American countries, in particular, have interest in this output.	N/A
Stakeholder Involvement: A list of these institutions to be provided.	A list is provided in Annex 4 of PRODOC. Section IV, part III of PRODOC details Stakeholders involvement in the project.	List of Stakeholder Institution of PRODOC p. 142-158
Monitoring and Evaluation: Describe approach for M&E system	UNDP/GEF M&E plan described in Annex 1 of PRODOC	PRODOC p. 132-139.
Financing Plan: Revised budget with details. Indication of Government Contributions. The Government has estimated co-financing of US\$4,175,600, including in-kind.	Budget detailed on Concept Document (which is part of the PRODOC as an Annex). PRODOC budget on p. 35-36. Co-financing letters are part of the PRODOC as Annex 3, the estimated co-financing was confirmed.	R Revised in Concept Document p. 53-56 and PRODOC budget on p. 35-36 and Co-fin letters p.141.
Implementing Agency Fees: IA fees to be included.	Fees for a FSP project are expected.	N/A

STAP roster review necessary	STAP roster review undergone. STAP comments and responses inserted into the Executive Summary file with indication of changes into Concept and PRODOC.	P. 17-27 of the Executive Summary
Submission of detailed budget for Output 1.1.3 and 1.1.4 of the inventory Section on agriculture and land use change and forestry sector.	Budget detailed on Concept Document (which is part of the PRODOC as an Annex). Budget detailed on Concept Document (which is part of the PRODOC as an Annex). PRODOC budget includes those costs.	Revised in Concept Document p. 53-56 and PRODOC budget on p. 35-36.
Clarification provided on the budget for item under Outcome 2.1 on regional modeling. Earlier comments by GEFSEC had not agreed to support climate change scenario work for the region of South America unless there is an agreement with the concerned countries.	Budget detailed on Concept Document (which is part of the PRODOC as an Annex). PRODOC budget includes those costs.	Revised in Concept Document p. 53-56 and PRODOC budget on p. 35-36.
Regarding outcome 2.1.4, the implementing agency needs to provide indicators on how capacity built will be measured at the completion of the project.	Annex 1 of PRODOC details the M&E plan for the project. In general terms, it is expected that the number of specialists trained and courses offered serve as proxy indicators for capacity building. During the inception phase, indicators will be refined to assess the sustainability of the National Communication process in the country, including capacity building aspects (Activity 3.1.1.2).	Revised in Concept Document p. 48 and PRODOC p. 132-139.

<b>RESPONSE TO STAP REVIEW</b>
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*STAP EXPERT REVIEW*

**A Review**  
**Second National Communication of Brazil to the UNFCCC**

Jayant A. Sathaye

1. Summary

My overall impression of the proposed project is that it is a well conceived project and addresses many of the weaknesses that the Brazilian team had identified with respect to its Initial National Communication, which focused mainly on the preparation of Brazil's national emissions inventory. The proposed allocation of resources within the inventory category, however, would benefit from a careful assessment of the uncertainty values identified in the INC, the absolute magnitude of the affected emissions, and the effort required to improve these estimates. Vulnerability and adaptation (V&A) is a new component of the Second National Communication (SNC) proposal. It correctly focuses on both regional scenarios and the adaptation needs in each sector. The breadth of activities here and in the inventory calls for an explicit activity to coordinate the substantive inputs and outputs, and allocation of resources for each activity by year between these two categories, and also within V&A between the regional scenarios and adaptation activities. Finally, the INC had done pioneering work in promoting its research through a web site and getting hundreds of institutions and specialists to participate, and several of these to fund the project. Similar stakeholder participation would certainly enhance the successful completion of the SNC.

2. Introduction

The proposed project is to prepare Brazil's Second National Communication to the UNFCCC. It is an Enabling Activity which will extend Brazil's coverage under the Initial National Communication which was prepared for the year 1994. Brazil submitted the INC to the UNFCCC in late 2004. The proposal includes consideration of the V&A activity which is an important goal of a national communication to the UNFCCC. The proposal also plans to update the steps taken or envisaged to implement the Convention, including activities related to education and awareness raising.

The total requested GEF funding for this proposal is \$3.4 million compared to the \$1.5 million GEF funding for the INC. The latter was supplemented by \$0.4 million from the US Country Studies Program and more than \$ 1 million from Brazilian sources. The total funding for the INC was thus of the order of \$3 million.

### 3. Scientific and technical soundness of the project, and identification of global significance

The proposed project builds on the INC inventory and other work that was reported by Brazil in 2004. It notes that Brazil is a large country with the world's twelfth largest GNP and fifth largest population. As noted in the INC, about 75% of its carbon dioxide emissions are derived from the land use change and forestry sector (LUCF), and 77% of the methane and 90% of the nitrous oxide emissions from the agricultural sector. The LUCF sector also accounts for about 50% of the carbon monoxide emissions. The land-related forestry and agriculture sectors are dominant contributors to the country's greenhouse gas (GHG) emissions. It is appropriate therefore for the proposed inventory work to focus on these two sectors.

The INC work used IPCC default factors for several sectors such as emissions from the production of cement. Brazilian cement production, however, relies on a mix of fuels that include a variety of biomass with different carbon content and heat values. It is therefore appropriate for Brazil to develop its own activity levels and emissions factors that are suited to the indigenous conditions. Also in some cases, the INC was unable to gather data such as on wastewater effluents, and the SNC proposes to conduct sample surveys to gather primary data for this purpose. Given the resources being requested in the LUCF sector, similar information about the extent of ground truthing needed to substantiate the satellite image data, and the use of survey instruments would strengthen this component of the proposal.

The INC devoted a significant amount of resources to the LUCF sector, which is appropriate given its large contribution to Brazil's GHG emissions. In addition to a sector's magnitude of GHG emissions, another factor, uncertainty estimates, should be used as a guide to the allocation of resources to each sector. The INC notes that the uncertainty is highest, 39% in the estimates of carbon dioxide emissions from the above sector, and is 46% in the aggregate for agricultural methane emissions, and 57% for N<sub>2</sub>O emissions. By the same token, the uncertainty estimates are also high for methane and N<sub>2</sub>O emissions from the energy sector (28% and 50% respectively) and waste sector (51% and 50% respectively). The resources devoted to determining the activity and emissions factors for these sectors and gases appear to be limited in comparison to those for the LUCF sector. While there could be many sound reasons for this, the proposal needs to state its rationale, and if needed, change the resource allocation to adequately reflect uncertainty, absolute emissions reduction, and the effort required to gather data for each sector.

The proposal has two components on vulnerability and adaptation (V&A). The first component is focused on the question of research on the regional impacts of climate change based on SRE Scenarios that will be of value to neighboring countries as well. The second component of the work is focused on adaptation in the key sectors –health, energy, water resources, agriculture, and coastal zone management. Given the large size of the country, and research indicating that emissions from Brazil may have impacts on itself and other neighboring countries, it is worthwhile, as proposed, to examine regional scenarios of climate change impacts. The sectors noted are clearly the once under threat of damage and hence developing sound adaptation strategies too is important for Brazil. It is not clear, however, whether the proposal takes into account the Adaptation Policy Framework that was put

forward by UNDP-GEF as technical guidance for the development and assessment of adaptation policies and measures. The proposal should address whether this Framework was used or will be used in determining adaptation policies.

For each V&A topic, the proposal puts forward a short background, the activity and sub activity to be conducted, and in the chapeau of Section 2.2 it notes that the development of some results will depend on the outcome of climate regional models. I think it is important to strengthen this connection between the two activities. The rationale for supporting Output 2.1 is to allow adaptation activities to be carried out in the context of regional scenarios. To accomplish this, it would be important to have a separate activity with adequate resources allocated to achieve the coordination and linking between the two Outputs. This will require discussions between the two teams to agree on geographic scale, time horizon, time intervals, and driving factors to be taken into consideration that are common to both outcomes. The coordination also needs to be evident in the allocation of resources in the financial plan table in the proposal. The coordination issue is also important between the inventory and V&A sections. For instance, the inventory will collect data on reservoir volume, extent, and their methane emissions. How is this work to be coordinated with the adaptation team's work on water resources and hydro energy generation?

#### 4. Project replicability, sustainability, and stakeholder involvement

In order to ensure project replicability and sustainability, a successful demonstration of both the technical and institutional aspects of the project is needed. In its INC work, Brazil has clearly demonstrated the benefits of the use of web-based publication of reports and other material, and the SNC intends continue this tradition. The web-based approach has also been implemented by CC:INFOWEB program. It is also laudatory that the Brazilian government has provided \$300,000 of annual support to the inventory and other work as part of its Multiannual Plan. In addition, the INC involved many stakeholders, over 150 institutions and 700 specialists, from industry, academia, and environmental organizations. As we noted above, the INC project was supported by other fundors from Brazil who provided almost equivalent amount of funding for the project. Will the SNC also engage stakeholders and seek and obtain like amount of funding in the future? This would indicate the continued interest and attention from stakeholders and ensure the sustainability of the proposed effort.

#### 5. Detailed questions/comments:

- (i) The proposal is unclear about the year for the inventory. SNC is intended for 2000, but the proposal states: "The project will extend its coverage of ....to the 1990 to 2000 period." Is the inventory to be done for each year during this period, only for 2000, or some other years?
- (ii) The proposed funding for the SNC does not address the question of climate change mitigation. Will it be included in the national communications for which \$100 K is being requested?
- (iii) P. 10 – twelfth largest economy, but on p. 16 –ninth largest economy... Which is it?
- (iv) Sub activity 1.1.1.4.2 – incomplete last sentence
- (v) Sub activity 1.1.2.4 – For some industries, where ...
- (vi) Output 1.1.3 – fifth sentence – ...studies were used ...

- (vii) Sub activity 1.1.3.3.1 – Coordinate with GEF/UNDP Asia rice methane research project
- (viii) Outcome 2.1 – p. 31 – several grammatical errors in first paragraph
- (ix) Detailed budget – p. 53 – typo? – Subtotal Objective 4: \$200,000 – should be \$100,000?

## RESPONSE TO STAP REVIEW

Summary of STAP Comment	Response	Location where document was revised (sections, paragraphs)
<p>I - The proposed allocation of resources within the inventory category would benefit from a careful assessment of the uncertainty values identified in the INC, the absolute magnitude of the affected emissions, and the effort required to improve these estimates:</p> <p>(i) Given the resources being requested in the LUCF sector, similar information about the extent of ground truthing needed to substantiate the satellite image data, and the use of survey instruments would strengthen this component of the proposal.</p>	<p>Sub-Activity 1.1.4.1.1 Improve data on biomass density for the different biomes and types of vegetation. In order to cover gaps in the RADAM information used in the FNC and better adjust for biomass fractions not covered in the RADAM project, a limited research on experimental plots will be conducted, using available expertise in local universities and taking in consideration the high cost of these experiments</p>	<p>Sub-Activity 1.1.4.1.1 was revised in Concept Document – p. 27.</p>
<p>(ii) The resources devoted to determining the activity and emissions factors for these sectors and gases appear to be limited in comparison to those for the LUCF sector. While there could be many sound reasons for this, the proposal needs to state its rationale, and if needed, change the resource allocation to adequately reflect uncertainty, absolute emissions reduction, and the effort required to gather data for each sector.</p>	<p>N2O emissions from Agricultural Soils: It is highly recommended the development of country-specific emission factors for N2O emissions in Brazil, considering that emissions are based on regional differences, climate conditions, pasture characteristics and management practices.</p> <p>It is worth mentioning that a limited amount of resources will be assigned to activities related to N2O emissions in the SNC, taking in consideration that decreasing the uncertainty of N2O emissions is very difficult.</p>	<p>Revised Concept Document - p. 23; Concept Document – p. 16; Project Document – p. 10</p>
<p>II - The breadth of activities on Vulnerability and adaptation (V&amp;A) and in the inventory calls for an explicit activity to coordinate the substantive inputs and outputs, and allocation of resources for each activity by year between these two categories, and also within V&amp;A</p>	<p>This strategy would correspond to the steps “Assessing current vulnerability” and “Assessing future climate risks” of the Adaptation Policy Framework of the UNDP/GEF.</p>	<p>Text was revised in Concept Document – p. 38; Executive Summary - p. 4; Project Document – p. 11.</p>

<p>between the regional scenarios and adaptation activities:</p> <p>(i). It is not clear, however, whether the proposal takes into account the Adaptation Policy Framework that was put forward by UNDP-GEF as technical guidance for the development and assessment of adaptation policies and measures. The proposal should address whether this Framework was used or will be used in determining adaptation policies.</p>		
<p>(ii) For each V&amp;A topic, the proposal puts forward a short background, the activity and sub activity to be conducted, and in the chapeau of Section 2.2 it notes that the development of some results will depend on the outcome of climate regional models. It is important to strengthen this connection between the two activities.</p>	<p>However, further development of some results of Outcome 2.2 will depend on future results achieved in developing climate regional models (Outcome 2.1), which will provide more reliable scenarios for South America, in respect to the impacts of climate change either on mean surface temperature or on precipitation patterns.</p> <p>See also response to next item.</p>	<p>Text revised on Concept Document - p. 38; Concept paper - p. 47, 54 and 55, Executive Summary - p. 4; Project Document - p. 12, 18, 27 and 30.</p>
<p>(iii) The rationale for supporting Output 2.1 is to allow adaptation activities to be carried out in the context of regional scenarios. To accomplish this, it would be important to have a separate activity with adequate resources allocated to achieve the coordination and linking between the two Outputs. This will require discussions between the two teams to agree on geographic scale, time horizon, time intervals, and driving factors to be taken into consideration that are common to both outcomes. The coordination also needs to be evident in the allocation of resources in the financial plan table in the proposal. The coordination issue is also important between the inventory and V&amp;A sections.</p>	<p>Text revised to conform to this suggestion. Output 2.2.7 - Establish a Coordination between the elaboration of the Regional Modeling of Climate and Climate Change Scenarios and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil.</p> <p>The results related to Outcome 2.1 will take some time to be concluded (as indicated in the chronogram). However, as mentioned before, a preliminary analysis of the impacts associated to climate change in key areas in accordance with Brazilian national circumstances, mainly in those areas that vulnerability is</p>	<p>Text revised in Concept paper - p. 47, 54 and 55, Executive Summary - p. 4; Project Document - p. 12, 18, 28 and 31.</p>

	<p>influenced by physical, social and economic factors, will be developed in Outcome 2.2 independently while Brazilian future climate scenarios have not been concluded. The areas selected are considered to be strategically relevant, where the impacts associated to climate change can be important to Brazil. However, it is necessary a coordination between the preliminary results of Outcome 2.1 and 2.1.</p> <p>Activity 2.2.7.1 Establish a Coordination unit between the preliminary results related to the elaboration of the Regional Modeling of Climate and Climate Change Scenarios (Outcome 2.1) and the vulnerability and adaptation research and studies concerning strategic sectors that are vulnerable to the impacts associated with climate change in Brazil (Outcome 2.1).</p> <p>Sub-Activity 2.2.7.1.1 Evaluate the geographic scale, time horizon, time intervals, barriers and driving factors that are common to both outcomes.</p> <p>Sub-Activity 2.2.7.1.2 Identify data related to Outcome 2.2 that could be useful to the activities undertaken under Outcome 1.1 and vice-versa and make it available to the respective stakeholders involved in such activities.</p>	
<p>III - The INC had done pioneering work in promoting its research through a web site and getting hundreds of institutions and specialists to participate, and several of these to fund the project. Similar stakeholder participation would certainly enhance the successful</p>	<p>Because of the broad consultation processes among government, academic institutions, private sector and civil society organizations, throughout the period of preparation of Brazil's First National Communication, this project ensures the input of state-</p>	<p>Concept Document - pp. 49-50; Executive Summary - p. 8; Project Document - p. 14.</p> <p>Paragraph added: Concept Document - pp. 49-50; Executive Summary - p. 8; Project Document - p. 14-15.</p>

<p>completion of the SNC [and ensure the sustainability and replicability of the proposed effort].</p> <p>(i) Will the SNC also engage stakeholders and seek and obtain like amount of funding in the future? This would indicate the continued interest and attention from stakeholders and ensure the sustainability of the proposed effort.</p>	<p>of-the-art expertise and consensus to design project interventions, further underscoring technical sustainability. This strategy will be maintained and enlarged for the SNC. The comprehensive involvement of stakeholders, in a decentralized process, will be sought and this high level of participation in consultations on project design indicates the strong social sustainability of the proposal. The following text has been included to further explain this issue:</p> <p>Paragraph added:</p> <p>A second phase of the Climate Changes Program under PPA started in 2004 and will be completed in 2007. The resources provided by the PPA will be complementary in nature and will enable Brazil to continue its efforts towards the implementation of the Convention, allowing for the continued implementation of some activities financed by the federal budget under the coordination of MCT, and especially keeping the climate change office operational. It is expected that this Program be held in continuous basis, and that, gradually, in the future, the costs of the UNFCCC implementation in the country be fully incorporated into the national budget.</p> <p>(Concept Document - pp. 49-50; Executive Summary - p. 8; Project Document - p. 14-15)</p> <p>Paragraph added:</p> <p>Some institutions that worked in the preparation of the FNC have</p>	<p>Paragraph added: (Concept Document - p. 49; Executive Summary - p. 8; Project Document - p. 14-15.</p> <p>Sentence added: Concept Document - p. 50; Executive Summary - p. 9; Project Document - p. 15.</p>
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	<p>already allocated some human and financial for the development of climate change related activities. With the enlargement of the number of institutions involved in this SNC, it is expected more capacity building (including staff trained) and the enhancement of research on climate change in Brazil, particularly in areas where few researchers have been working. It is expected institutional strengthening not only of governmental institutions, but of all stakeholders involved in the preparation of the SNC.</p> <p>(Concept Document - p. 49; Executive Summary - p. 8; Project Document - p. 14-15)</p> <p>Sentence added</p> <p>It is expected that the SNC could enhance and extend the studies on activity data and emission factors related to sectors that involve a high degree of uncertainty, considering the lack of emission factors and/or activity data (savanna burning, waste, soil carbon emissions and, planted forests emissions/uptake), which will facilitate inventory preparation and ensure more reliable results in the future.</p> <p>(Concept Document - p. 50; Executive Summary - p. 9; Project Document - p. 15)</p>	
<p>The proposal is unclear about the year for the inventory. SNC is intended for 2000, but the proposal states: “The project will extend its coverage of ....to the 1990 to 2000 period.” Is the inventory to be done for each year during this period, only for 2000, or some other years?</p>	<p>Text revised to clarify the issue: to <u>cover annual emissions</u> and removals for the 1990 to 2000 period, (Concept Document - p. 2; Project Document - cover)</p> <p>The objective of the second phase is to refine the Brazilian Inventory of Anthropogenic</p>	<p>Concept Document - p. 17; Executive Summary - pp. 2-3; Project Document - p. 10</p>

	<p>Emissions and Removals of Greenhouse Gases and to extend its coverage to the 1990 to 2000 period <u>in an annual basis, as well as the strengthening of the national structure established for the estimation of GHG.</u> It will focus on the sectors/gases that have either a significant share of the emissions or present a large degree of uncertainty, <u>or both, taking in consideration the efforts required to improve the estimates.</u> These activities are described below. (Concept Document - p. 17; Executive Summary - pp. 2-3; Project Document - p. 10)</p>	
<p>The proposed funding for the SNC does not address the question of climate change mitigation. Will it be included in the national communications for which \$100 K is being requested?</p>	<p>Text revised to clarify the issue: Activity 3.2.1 Describe programs containing measures to mitigate climate change implemented or been elaborated in Brazil. This activity will build on a baseline activity financed by the Government of Brazil whereby, based on available information, national programmes and actions to mitigate climate change are prioritized and subject to monitoring and reporting at national level. <u>National mitigation strategy relies mainly in the designing and developing of CDM project activities (CDM activities not to be funded by GEF).</u> Registered projects will be assessed and reported.</p>	<p>Concept Document - p. 48; Project Document - 29</p>
<p>P. 10 – twelfth largest economy, but on p. 16 – ninth largest economy... Which is it?</p>	<p>It is the twelfth, text corrected.</p>	<p>Concept Document - p. 16</p>
<p>Sub activity 1.1.1.4.2 – incomplete last sentence</p>	<p>Last sentence completed: This methodology will be used in the SNC, although the difficulty in data gathering <u>does not guarantee that uncertainty will be reduced.</u></p>	<p>Concept Document - p. 19</p>
<p>Sub activity 1.1.2.4 – For some industries, where ...</p>	<p>Text checked: For some industries <u>where</u> assessment of the technology was conducted (...)</p>	<p>Concept Document - p. 21</p>

Output 1.1.3 – fifth sentence – ...studies were used ...	Wherever possible, existing studies <u>were used</u> as well as information obtained in consultation with specialists in the area.	Concept Document - p. 22
Sub activity 1.1.3.3.1 – Coordinate with GEF/UNDP Asia rice methane research project	Suggestion accepted and included. Sub-Activity 1.1.3.3.1 Research the methane emission from rice cultivation under different conditions of climate, soil and agricultural practices, including sample measurement of emissions. (...) <u>An attempt, through EMBRAPA, will be made to coordinate with GEF/UNDP Asia rice methane research project.</u>	Concept Document - p. 24
Outcome 2.1 – p. 31 – several grammatical errors in first paragraph	Errors corrected.	Concept Document - p. 31
Detailed budget – p. 53 – typo? – Subtotal Objective 4: \$200,000 – should be \$100,000?	Subtotal is U\$100,000 and was corrected in the text.	Concept Document - p. 53

## ANNEX 2:

### M&E Plan and Budget for FSP

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF.

The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

#### **1. MONITORING AND REPORTING**

##### **1.1. Project Inception Phase**

A Project Inception Workshop will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate.

A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's log frame matrix. This will include reviewing the log frame (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

Additionally, the purpose and objective of the Inception Workshop (IW) will be to: (i) introduce project staff with the UNDP-GEF *expanded team* which will support the project during its implementation, namely the CO and responsible Regional Coordinating Unit staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephrasing.

The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase.

## 1.2. Monitoring responsibilities and events

A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

*Day to day monitoring of implementation progress* will be the responsibility of the Project Coordinator, Director or CTA (depending on the established project structure) based on the project's Annual Work Plan and its indicators. The Project Team will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

The Project Coordinator and the Project GEF Technical Advisor will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local implementing agencies will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop and tentatively outlined in the indicative Impact Measurement Template at the end of this Annex. The measurement, of these will be undertaken through subcontracts or retainers with relevant institutions (e.g. vegetation cover via analysis of satellite imagery, or populations of key species through inventories) or through specific studies that are to form part of the projects activities (e.g. measurement carbon benefits from improved efficiency of ovens or through surveys for capacity building efforts) or periodic sampling such as with sedimentation.

*Periodic monitoring of implementation progress* will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

UNDP Country Offices and UNDP-GEF RCUs as appropriate, will conduct yearly visits to projects that have field sites, or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the Steering Committee can also accompany, as decided by the SC. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all SC members, and UNDP-GEF.

*Annual Monitoring* will occur through the **Tripartite Review (TPR)**. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The project proponent will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The project proponent will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component

may also be conducted if necessary.

### ***Terminal Tripartite Review (TTR)***

The terminal tripartite review is held in the last month of project operations. The project proponent is responsible for preparing the Terminal Report and submitting it to UNDP-CO and LAC-GEF's Regional Coordinating Unit. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation of formulation.

The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks are provided in Annex .../will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

#### **1.3. Project Monitoring Reporting**

The Project Coordinator in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (f) are mandatory and strictly related to monitoring, while (g) through (h) have a broader function and the frequency and nature is project specific to be defined throughout implementation.

##### **(a) *Inception Report (IR)***

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/ Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan would include the dates of specific field visits, support missions from the UNDP-CO or the Regional Coordinating Unit (RCU) or consultants, as well as time-frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

##### **(b) *Annual Project Report (APR)***

The APR is a UNDP requirement and part of UNDP's Country Office central oversight, monitoring and project management. It is a self-assessment report by project management to the CO and provides input to the country office reporting process and the ROAR, as well as forming a key input to the Tripartite Project Review. An APR will be prepared on an annual basis prior to the Tripartite Project Review, to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

The format of the APR is flexible but should include the following:

- An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome
- The constraints experienced in the progress towards results and the reasons for these
- The three (at most) major constraints to achievement of results
- AWP, CAE and other expenditure reports (ERP generated)
- Lessons learned
- Clear recommendations for future orientation in addressing key problems in lack of progress

**(c) *Project Implementation Review (PIR)***

The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the CO together with the project. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by the project, the executing agency, UNDP CO and the concerned RC.

The individual PIRs are collected, reviewed and analyzed by the RCs prior to sending them to the focal area clusters at the UNDP/GEF headquarters. The focal area clusters supported by the UNDP/GEF M&E Unit analyze the PIRs by focal area, theme and region for common issues/results and lessons. The TAs and PTAs play a key role in this consolidating analysis.

The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.

The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP/GEF has prepared a harmonized format for reference.

**(d) *Quarterly Progress Reports***

Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office and the UNDP-GEF regional office by the project team. See format attached.

**(e) *Periodic Thematic Reports***

As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

**(f) *Project Terminal Report***

During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

(g) **Technical Reports** (project specific - optional)

Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

(h) **Project Publications** (project specific - optional)

Project Publications will form a key method of crystallizing and disseminating the results and achievements of the Project. These publications may be scientific or informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these Reports, or may be summaries or compilations of a series of Technical Reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

## 2. INDEPENDENT EVALUATION

The project will be subjected to at least two independent external evaluations as follows:

(i) **Mid-term Evaluation**

An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

(ii) **Final Evaluation**

An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

Audit Clause

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

### 3. LEARNING AND KNOWLEDGE SHARING

Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- ◆ The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics. UNDP/GEF shall establish a number of networks, such as Integrated Ecosystem Management, eco-tourism, co-management, etc, that will largely function on the basis of an electronic platform.
- ◆ The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned.

The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identify and analyzing lessons learned is an on- going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

**TABLE 1: INDICATIVE MONITORING AND EVALUATION WORK PLAN AND CORRESPONDING BUDGET**

<b>Type of M&amp;E activity</b>	<b>Responsible Parties</b>	<b>Budget US\$</b> <i>Excluding project team Staff time</i>	<b>Time frame</b>
Inception Workshop	<ul style="list-style-type: none"> <li>▪ Project Coordinator</li> <li>▪ UNDP CO</li> <li>▪ UNDP GEF</li> </ul>	To be held in Brasilia with Project Team and UNDP	Within first two months of project start up
Inception Report	<ul style="list-style-type: none"> <li>▪ Project Team</li> <li>▪ UNDP CO</li> </ul>	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	<ul style="list-style-type: none"> <li>▪ Project Coordinator will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members</li> </ul>	To be finalized in Inception Phase and Workshop. Estimated in US\$33,000 foreseen	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance Indicators (measured on an annual basis)	<ul style="list-style-type: none"> <li>▪ Oversight by Project GEF Technical Advisor and Project Coordinator</li> <li>▪ Measurements by regional field officers and local IAs</li> </ul>	To be determined as part of the Annual Work Plan's preparation. Estimated in US\$20,000	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	<ul style="list-style-type: none"> <li>▪ Project Team</li> <li>▪ UNDP-CO</li> <li>▪ UNDP-GEF</li> </ul>	None	Annually
TPR and TPR report	<ul style="list-style-type: none"> <li>▪ Government Counterparts</li> <li>▪ UNDP CO</li> <li>▪ Project team</li> <li>▪ UNDP-GEF Regional Coordinating Unit</li> </ul>	None	Every year, upon receipt of APR

Steering Committee Meetings	<ul style="list-style-type: none"> <li>▪ Project Coordinator</li> <li>▪ UNDP CO</li> </ul>	None	Following Project IW and subsequently at least once a year
Periodic status reports	<ul style="list-style-type: none"> <li>▪ Project team</li> </ul>	US\$2,000	To be determined by Project team and UNDP CO
Technical reports	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ Hired consultants as needed</li> </ul>	US\$5,000	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ UNDP- CO</li> <li>▪ UNDP-GEF Regional Coordinating Unit</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	US\$8,000	At the mid-point of project implementation.
Final External Evaluation	<ul style="list-style-type: none"> <li>▪ Project team,</li> <li>▪ UNDP-CO</li> <li>▪ UNDP-GEF Regional Coordinating Unit</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	US\$12,000	At the end of project implementation
Terminal Report	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ UNDP-CO</li> <li>▪ External Consultant</li> </ul>	None	At least one month before the end of the project
Lessons learned	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ UNDP-GEF Regional Coordinating Unit (suggested formats for documenting best practices, etc)</li> </ul>	US\$9,000 (average 3,000 per year)	Yearly
Audit	<ul style="list-style-type: none"> <li>▪ UNDP-CO</li> <li>▪ Project team</li> </ul>	US\$3,000 (average \$1,000 per year)	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	<ul style="list-style-type: none"> <li>▪ UNDP Country Office</li> <li>▪ UNDP-GEF Regional Coordinating Unit (as appropriate)</li> <li>▪ Government representatives</li> </ul>	US\$10,000 (average one visit per year)	Yearly
<b>TOTAL INDICATIVE COST</b> <i>Excluding project team staff time and UNDP staff and travel expenses</i>		US\$ 102,000	

**ANNEX 3 – Approved Concept**

**(separate file)**

**ANNEX 4 – Endorsement and Co-financing Letters**

**(separate file)**

## **ANNEX 5 – List of Stakeholders**

### **Participating institutions**

Agência Nacional de Energia Elétrica - ANEEL  
Agência Nacional do Petróleo - ANP  
Associação Brasileira da Indústria de Carvão Vegetal - ABRACAVE  
Associação Brasileira da Indústria de Óleos Vegetais - ABIOVE  
Associação Brasileira da Indústria do Alumínio - ABAL  
Associação Brasileira da Indústria Química - ABIQUIM  
Associação Brasileira de Celulose e Papel - BRACELPA  
Associação Brasileira de Cimento Portland  
Associação Brasileira de Criadores de Bovinos da Raça Holandesa  
Associação Brasileira de Criadores de Gado de Leite  
Associação Brasileira de Criadores de Gado Pardo-Suíço  
Associação Brasileira de Extratores e Refinadores de Sal - ABERSAL  
Associação Brasileira de Papel e Celulose - BRACELPA  
Associação Catarinense de Criadores de Suínos  
Associação de Plantadores de Cana de Minas Gerais  
Banco Nacional de Desenvolvimento Econômico e Social - BNDES  
Billiton Metais  
Biomass Users Network - BUN  
Centrais Elétricas Brasileiras S.A. - ELETROBRÁS  
Centro de Energia Nuclear na Agricultura - CENA/USP  
Centro Nacional de Referência em Biomassa - CENBIO/USP  
Centro Nacional de Tecnologias Limpas - CNTL  
Companhia de Controle de Poluição Ambiental e de Tecnologia de Saneamento do Estado de São Paulo - CETESB  
Companhia de Desenvolvimento do Vale do São Francisco - CODEVASF  
Companhia de Gás de São Paulo - COMGÁS  
Companhia de Serviços Urbanos - Urbana  
Companhia Hidro Elétrica do São Francisco - CHESF  
Companhia Vale do Rio Doce - CVRD  
Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável - CEBDS  
Cooperativa de Produtores de Cana, Açúcar e Álcool - COPERSUCAR  
Coordenadoria de Assistência Técnica Integral - CATI  
e&e Economia e Energia  
Eletrobrás Termonuclear S.A. - ELETRONUCLEAR  
Embrapa - Acre  
Embrapa Agroindústria Tropical - Centro Nacional de Pesquisa de Agroindústria Tropical  
Embrapa Algodão - Centro Nacional de Pesquisa de Algodão  
Embrapa Cerrados  
Embrapa Gado de Corte  
Embrapa Gado de Leite  
Embrapa Pecuária do Sudeste  
Embrapa Pecuária do Sul  
Embrapa Rondônia  
Embrapa Roraima  
Embrapa Solos  
Embrapa Suínos e Aves  
Empresa Brasileira de Pesquisa Agropecuária - EMBRAPA  
Empresa de Pesquisa Agropecuária de Minas Gerais - EPAMIG  
Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina S.A. - EPAGRI  
Escola Superior de Agricultura “Luiz de Queiroz” - ESALQ  
Frigorífico Marba Ltda.  
Frigorífico Rio Doce S.A.  
Fundação Brasileira para o Desenvolvimento Sustentável - FBDS  
Fundação de Apoio à Pesquisa e Extensão - FAPEX  
Fundação Estadual do Meio Ambiente - FEMA - MT

Fundação Instituto Brasileiro de Geografia e Estatística - IBGE  
Fundação Oswaldo Cruz - FIOCRUZ  
Fundação para a Ciência Aeroespacial, Aplicações e Tecnologias - FUNCATE  
GDC Alimentos S.A.  
Gean Engenharia Ambiental  
General Motors  
Gessy Lever Ltda.  
Indústria de Bebidas Antarctica do Piauí  
Indústria de Bebidas Antarctica Ltda.  
Indústria de Bebidas Antarctica Niger S.A.  
Indústria de Bebidas Antarctica Paulista  
Indústria de Bebidas Antarctica Polar  
Indústria de Bebidas Antarctica Polar S.A. Curitiba  
Indústria de Bebidas Belverde Ltda.  
Indústria de Celulose e Papel - CELMAR S.A.  
Indústria e Comércio de Carnes Minerva  
Indústria Müller S.A.  
Indústrias Nucleares do Brasil  
Instituto Agrônomo de Campinas - IAC  
Instituto Agrônomo do Paraná - IAPAR  
Instituto Astronômico e Geofísico - IAG/USP  
Instituto Brasileiro de Siderurgia - IBS  
Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis - IBAMA  
Instituto de Eletrotécnica e Energia - IEE/USP  
Instituto de Estudos Avançados - IEA/USP  
Instituto de Física - IF/USP  
Instituto de Zootecnia - CPA/SAA  
Instituto Nacional de Eficiência Energética - INEE  
Instituto Nacional de Meteorologia - INMET  
Instituto Nacional de Pesquisas da Amazônia - INPA  
Instituto Nacional de Pesquisas Espaciais - INPE  
Laticínios Cambará Ltda.  
Laticínios Catupiry Ltda.  
Laticínios Leco Ltda.  
Laticínios Matinal S.A.  
Laticínios Noiva da Colina Ltda.  
Laticínios São Miguel Ltda.  
Leiner Davis Gelatin Ind. Com. Ltda.  
Mauri Brasil Indústria e Com. Importação Ltda  
Nature Sensoriamento Remoto e Geoprocessamento  
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Petróleo Brasileiro S.A - PETROBRAS  
Prefeitura Municipal de Alvorada  
Prefeitura Municipal de Amparo  
Prefeitura Municipal de Anápolis  
Prefeitura Municipal de Apucarana  
Prefeitura Municipal de Araçatuba  
Prefeitura Municipal de Araras  
Prefeitura Municipal de Atibaia  
Prefeitura Municipal de Bagé  
Prefeitura Municipal de Batatais  
Prefeitura Municipal de Bauru  
Prefeitura Municipal de Betim  
Prefeitura Municipal de Blumenau  
Prefeitura Municipal de Botucatu  
Prefeitura Municipal de Caieiras  
Prefeitura Municipal de Canoas

Prefeitura Municipal de Catanduva  
Prefeitura Municipal de Concórdia  
Prefeitura Municipal de Criciúma  
Prefeitura Municipal de Cruzeiro  
Prefeitura Municipal de Cubatão  
Prefeitura Municipal de Curitiba  
Prefeitura Municipal de Divinópolis  
Prefeitura Municipal de Fernandópolis  
Prefeitura Municipal de Foz do Iguaçu  
Prefeitura Municipal de Franco da Rocha  
Prefeitura Municipal de Guarapuava  
Prefeitura Municipal de Guarujá  
Prefeitura Municipal de Ibipitanga  
Prefeitura Municipal de Ilhéus  
Prefeitura Municipal de Imperatriz  
Prefeitura Municipal de Ipatinga  
Prefeitura Municipal de Itanhaém  
Prefeitura Municipal de Itapetinga  
Prefeitura Municipal de Itapevi  
Prefeitura Municipal de Itapira  
Prefeitura Municipal de Itatiba  
Prefeitura Municipal de Jaboticabal  
Prefeitura Municipal de Jacareí  
Prefeitura Municipal de Jales  
Prefeitura Municipal de Jandira  
Prefeitura Municipal de Joinville  
Prefeitura Municipal de Lençóis Paulista  
Prefeitura Municipal de Marissol  
Prefeitura Municipal de Matão  
Prefeitura Municipal de Mogi-Guaçu  
Prefeitura Municipal de Mogi-Mirim  
Prefeitura Municipal de Olímpia  
Prefeitura Municipal de Osasco  
Prefeitura Municipal de Parnaíba  
Prefeitura Municipal de Paulista  
Prefeitura Municipal de Petrolina  
Prefeitura Municipal de Salto  
Prefeitura Municipal de Santa Bárbara D'Oeste  
Prefeitura Municipal de Santa Cruz do Sul  
Prefeitura Municipal de Santa Luzia  
Prefeitura Municipal de Santana do Parnaíba  
Prefeitura Municipal de São Roque  
Prefeitura Municipal de Sapucaia do Norte  
Prefeitura Municipal de Sertãozinho  
Prefeitura Municipal de Sorocaba  
Prefeitura Municipal de Taguatinga  
Prefeitura Municipal de Taubaté  
Prefeitura Municipal de Uberlândia  
Prefeitura Municipal de Valinhos  
Prefeitura Municipal de Vitória da Conquista  
Prefeitura Municipal de Votorantim  
Prefeitura Municipal de Votuporanga  
Programa de Planejamento Energético/Coordenação dos Programas de Pós Graduação em Engenharia/Universidade Federal do Rio de Janeiro - COPPE/UFRJ  
Programa Nacional de Conservação de Eletricidade - PROCEL/ELETROBRÁS  
Programa Nacional do Uso Racional de Derivados de Petróleo e do Gás Natural - CONPET/PETROBRÁS  
Progresso Americana S.A. - PRODAM  
Sanecon Tecnologia e Assessoria Ltda  
Secretaria de Governo do Município de Embú

Secretaria de Meio Ambiente do Estado de São Paulo - SMA/SP  
Secretaria de Meio Ambiente do Estado do Rio de Janeiro - SMA/RJ  
Secretaria de Meio Ambiente do Leme  
Secretaria de Obras e Meio Ambiente - Seobam  
Secretaria de Obras e Serviços Públicos de Tupã  
Secretaria de Serviços Municipais de Caraguatatuba  
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Secretaria Municipal de Meio Ambiente de Cascavel  
Secretaria Municipal de Meio Ambiente e do Verde de São Paulo  
Secretaria Municipal de Serviços de Vitória  
Secretaria Municipal de Serviços Públicos  
Secretaria Municipal de Serviços Urbanos  
Secretaria Municipal de Serviços Urbanos de Cuiabá  
Secretaria Municipal de Serviços Urbanos de Marília  
Serviço Autônomo de Água e Esgoto de Sete Lagoas  
Serviço Nacional de Aprendizagem Industrial - SENAI  
Sindicato da Cana-de-Açúcar - SIDASUCAR  
Sindicato Nacional da Indústria de Extração de Carvão Mineral - SNIEC  
Sindicato Nacional da Indústria do Cimento - SNIC  
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