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**United Nations Development Programme**

**Country: BRAZIL**

**PROJECT DOCUMENT**



**Project Title:** Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC).

**UNDAF Outcome(s):** Incorporating sustainable development, green economy and decent labour paradigms into national public policies.

**UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:** Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded. **Output 1.4.** Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented.

**UNDP Strategic Plan Secondary Outcome:** Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded. **Output 1.3.** Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste.

**Expected CP Outcome(s):** Capacities for integrating sustainable development and productive inclusion for poverty reduction.

**Expected CPAP Output (s):** Low-carbon strategies with LECRDS concept adopted in Brazil and widely disseminated

**Executing Entity/Implementing Partner:** Ministry of Science, Technology and Innovation (MCTI)

**Implementing Entity/Responsible Partners:** Ministry of Science, Technology and Innovation (MCTI)

**Brief Description**

This Enabling Activity project will assist Brazil to prepare the Fourth National Communication (4NC) and Biennial Update Reports (BUR) required to meet obligations under the UNFCCC. The objective is to extend coverage of the annual Brazilian Inventory of Anthropogenic GHGs to period 1990-2014, focusing on the sectors/gases that have a significant share of GHG emissions and/or present a large degree of data uncertainty. The Brazilian Earth System Model (BESM) and downscaling with the Regional Earth System Model, developed to reduce the uncertainties in V&A assessments for different sectors, will be used to document climate scenarios. Furthermore, Brazil's description of national circumstances will be updated, as well as the steps to be taken or envisaged to implement the Convention. Finally, the project will continue to build institutional capacity for implementing the Convention in Brazil including undertaking activities related to climate change education and awareness.

Programme Period: 2015-2018  Atlas Award ID: 00085388 Project ID: 00093060 PIMS ID: 5187  Start date: 01 January 2015 End Date: 31 December 2018  Management Arrangements: National Implementation PAC Meeting Date: t.b.d	Total resources required US\$ 30,414,000 Total allocated resources: US\$ 30,414,000  <ul style="list-style-type: none"> <li>• GEF (grant) US\$ 7,528,500</li> <li>• Government (In-kind) US\$ 22,735,500</li> <li>• UNDP (in-kind) US\$ 150,000</li> </ul>
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Agreed by (Government):

\_\_\_\_\_  
Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

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Date/Month/Year

Agreed by (UNDP):

\_\_\_\_\_  
Date/Month/Year

## ACRONYMS AND ABBREVIATIONS

ABAL	Brazilian Aluminum Association (Associação Brasileira do Alumínio)
ABC	Brazilian Cooperation Agency
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)
APR	Annual Project Review
BA	state of Bahia
BCB	Central Bank of Brazil (Banco Central do Brasil)
BNDDES	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)
BUR	Biennial Update Report
CATI	Integral Technical Assistance Coordination (Coordenadoria de Assistência Técnica Integral)
CCF	Country Cooperation Framework
CCP	Climate Change Program
CCST	Earth System Science Center (Centro de Ciência do Sistema Terrestre)
CDM	Clean Development Mechanism
CDR	Combined Delivery Report
CE	state of Ceara
CEH	Centre for Ecology and Hydrology
CENA	Centre 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)
CFC	Chlorofluorocarbons
CIDES	Interministerial Committee for Sustainable Development (Comissão Interministerial para Desenvolvimento Sustentável)
CO <sub>2</sub>	Carbon dioxide
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)
COP	Conference of Parties
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)
CPAP	Country Programme Action Plan
CPTEC	Center for Weather Forecasts and Climate Studies (Centro de Previsão de Tempo e Estudos Climáticos)

CRU	Climate Research Unit
DDC	Data Distribution Centre
E&E	Economy and Energy
ECHAM	European Centre Hamburg Model
EF	Emission Factors
ELETRORBRAS	Brazilian Electric Power Company (Centrais Elétricas Brasileiras)
EMBRAPA	Brazilian Agricultural Research Corporation (Empresa Brasileira de Pesquisa Agropecuária)
ENSO	El Niño-Southern Oscillation
ES	State of Espírito Santo
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)
FEV	Final Evaluation
FINEP	Studies and Projects Financing Institution (Financiadora de Estudos e Projetos)
FIOCRUZ	Oswaldo Cruz Foundation (Fundação Oswaldo Cruz)
4NC	Fourth National Communication
FUNCATE	Foundation for Space Research, Application and Technology (Fundação da Ciência, Aplicação e Tecnologias Espaciais)
GCGCC	General Coordination on Global Climate Change
GCM	General Circulation Models
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFDL	Geophysical Fluid Dynamic Laboratory
GHG	Greenhouse Gas
GoB	Brazilian Government
GPG	Good Practice Guideline
GSFC	Goddard Space Flight Centre
GWh	Gigawatt (GW)-hours (1 x 10 <sup>6</sup> kWh)
GWP	Global Warming Potential
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)
IBICT	Brazilian Institute of Information in Science and Technology (Instituto Brasileiro de Informação em Ciência e Tecnologia)
IBRD	International Bank for Reconstruction and Development
INC	Initial National Communication
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)
kWh	kilowatt (kW)-hours
LNCC	National Laboratory for Scientific Computing (Laboratório Nacional de Computação Científica)

LUCF	Land Use Change and Forestry
LULUCF	Land Use, Land Use Change and Forestry
M&E	Monitoring and Evaluation
MBSCG	Brazilian Global Model of the Climate System (Modelo Brasileiro do Sistema Climatico Global)
MCTI	Ministry of Science, Technology and Innovation (Ministério da Ciência, Tecnologia e Inovação)
MDIC	Ministry of Development, Industry and Commerce (Ministério do Desenvolvimento, Indústria e Comércio)
MG	State of Minas Gerais
MMA	Ministry of Environment (Ministério do Meio Ambiente)
MME	Ministry of Mines and Energy (Ministério das Minas e Energia)
MSW	Municipal Solid Waste
MT	State of Mato Grosso
MTE	Mid-term Evaluation
MWh	Megawatt (MW)-hours ( $1 \times 10^3$ kWh)
NAMA	Nationally Appropriate Mitigation Action
NASA	National Aero-Space Agency
NC	National Communication
NCAR	National Center for Atmospheric Research
NCEP	National Center for Environment Predictions
NGO	Non-Governmental Organization
PA	State of Para
PB	Project Board
PE	State of Pernambuco
PETROBRAS	Brazilian Petroleum S.A. (Petróleo Brasileiro S.A.)
PI	State of Piaui
PIR	Project Implementation Reports
PMU	Project Management Unit
PPA	Multiannual Plan (Plano Plurianual)
PR	State of Parana
PRECIS	Providing Regional Climates for Impacts Studies
PROCEL	National Energy Conservation Program (Programa Nacional de Conservação de Energia)
QA/QC	Quality Assurance / Quality Control
R&D	Research and Development
RADAM	Radar in Amazonia (Radar na Amazônia)
RCM	Regional Climate Model
RCU	Regional Coordinating Unit (UNDP)
REDD	Reducing Emissions from Deforestation and Forest Degradation
Rede CLIMA	Brazilian Research Network on Global Climate Change
RJ	State of Rio de Janeiro
RS	State of Rio Grande do Sul
RTA	Regional Technical Advisor
SC	State of Santa Catarina
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
STA	Scientific Technical Assistance (GEF)
TA	Technical Assistance (GEF)
TGICA	Task Group on Data and Scenario Support for Impact and Climate Assessment
TNC	Third National Communication
TO	state of Tocantins
TWh	Terawatt (TW)-hours ( $1 \times 10^9$ kWh)
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 Programme
UNEP	United Nations Environment Programme
UNESP	State University Julio de Mesquita Filho (Universidade Estadual Júlio Mesquita Filho)
UNFCCC	United Nations Framework Convention on Climate Change
USCS	United State Country Studies Initiative
USP	University of São Paulo (Universidade de São Paulo)
V&A	Vulnerability and Assessment

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## A. SITUATION ANALYSIS

### Project rationale and policy conformity

1. The UNFCCC 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<sup>1</sup>. Developing country Parties will provide the UNFCCC with adequate information on the status of implementation of such obligations<sup>2</sup>. 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 in the country, based on the guidelines provided by the Conference of Parties (COP) for non-Annex I countries (Decision 17/CP.8). The Government of Brazil (GoB) has successfully submitted the Initial and Second National Communications and is currently concluding its Third National Communication (TNC).

2. Additionally, at COP 17 (Durban, 2011), the UNFCCC adopted guidelines for the Biennial Update Reports (BUR) preparation for Parties not included in Annex I to the Convention (Decision 2/CP.17, paragraphs 39-42 and Annex III decision 2/CP.17). The purpose of these reports is to increase transparency of mitigation actions and their effects. On this occasion, the modalities and guidelines for International Consultation and Analysis (ICA) were approved too. Developing countries must submit the first BUR by December 2014, according to their capabilities and level of support received.

3. The present proposal aimed at preparing the Fourth National Communication (4NC) and the Biennial Update Reports in Brazil fits within the described context and is prepared in accordance with UNFCCC guidance. The envisaged 4NC Project, which will be implemented by UNDP Brazil, has been endorsed by the Brazilian Government in a letter dated March 28th 2013.

4. In the process of elaborating the TNC, a permanent data platform for the National Inventory is currently under development so as to ensure regular updating, security, transparency and continuity. This platform will enable and promote wider public access to data concerning GHG emissions. However, the platform will still be at an early stage of development when the TNC is delivered. Therefore, such efforts shall be carried on in order to build a more robust database during the preparation of the 4NC.

5. Another important contribution for the Fourth National Communication accounts to the multiple research programs conducted by the Brazilian Research Network on Global Climate Change (Rede CLIMA). These research programmes are filling information gaps identified in the INC and SNC, and significantly contributing for the development of the TNC. This network was established by the Ministry of Science, Technology and Innovation (MCTI) in 2007 with the mission to generate and disseminate knowledge about the causes and effects of global climate change.

6. Along the preparation of the TNC, Brazil has identified several aspects that should be enhanced for the 4NC. The Inventory for the Land Use, Land Use Change and Forestry (LULUCF) Sector will be further refined by the utilization of satellite images taken at shorter time intervals for the Amazonia, Cerrado and Caatinga biomes. The Inventory will be further improved by

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<sup>1</sup> As described under paragraph 1 of Article 4 of the Convention. 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.

<sup>2</sup> As called for under Article 12.1.

calculating country specific emission factors for energy, agriculture and LULUCF. This work will allow for the extension and consolidation of existing partnerships with relevant government institutions and research centers, besides the expected improvement of current models and data platforms. However, these upgrades will imply higher costs, thus requiring additional funding for the expected refinement vis-à-vis the TNC.

7. The TNC will be presented to the UNFCCC by December 2014, and the implementation of the 4NC will begin after the official submission of the TNC. The First BUR will be presented in conjunction with the TNC. The BUR to be presented in 2016 will be a stand-alone update report, and the 2018 BUR will be presented in conjunction with the 4NC, according to Decision 2/CP.17.

### **National Climate Change policy**

8. Brazil adopted its National Plan on Climate Change in December 2008, which defines actions and measures aimed at mitigation and adaptation to climate change. Federal Law No. 12,144 of December 9, 2009 established the Brazilian Climate Change Fund to financially support mitigation and adaptation action using resources from the oil royalties. Federal Law No. 12,187 of December 29, 2009 provides the principles, objectives, guidelines and implementation mechanisms of the National Policy on Climate Change. This Law is a milestone since it creates a legal framework for actions that were already being implemented by the Federal Government and also for further policy-making activities by the Federal, state and local Governments.

9. The National Policy establishes voluntary mitigation actions leading to an expected reduction of 36.1% to 38.9% regarding the projected GHG emissions of Brazil by 2020. Although voluntary at the international level, this reduction target is enshrined in Brazil's National Policy on Climate Change, which provides for the elaboration of sectoral plans for mitigating and adapting to climate change.

10. It should be emphasized that in addition to containing a mitigation strategy, the Sectoral Plans should also include adaptation actions, defined by Law No. 12.187/2009 as initiatives and measures to reduce the vulnerability of natural and human systems against actual and expected effects of climate change. These sectoral plans are now in different stages of development and implementation.

11. It is worth mentioning that some of the sectoral plans were submitted in 2011 to the UNFCCC as nationally appropriate mitigation actions, as exemplified in the table below.

Table I – Nationally Appropriate Mitigation Actions presented to UNFCCC by Brazil, in 2011.

Nationally Appropriate Mitigation Actions	Range of estimated reduction in 2020 (Mt CO <sub>2</sub> e)	
<b>Reduction in Amazon deforestation</b>	564	564
<b>Reduction in “Cerrado” deforestation</b>	104	104



<b>Restoration of grazing land</b>	83	104
<b>integrated crop-livestock system</b>	18	22
<b>No-till farming</b>	16	20
<b>Biological nitrogen fixation</b>	16	20
<b>Energy efficiency</b>	12	15
<b>Increase in the use of biofuels</b>	48	60
<b>Increase in energy supply by hydroelectric power plants</b>	79	99
<b>Alternative energy sources</b>	26	33
<b>Iron and steel – charcoal from reforestation</b>	8	10

12. The Fourth National Communication and the Biennial Update Reports will be an important tool for decision making, as well for monitoring emissions reduction. The refined and updated inventory will provide a more reliable basis for monitoring the sectoral mitigation plans; planning further mitigation actions; identifying trends in GHG emissions; and estimating reductions resulting from domestic actions.

### Country eligibility

13. Brazil was the first signatory to the UNFCCC on June 4th 1992. Ratification by the Congress followed through Decree No.1, which was issued on February 28th 1994. The Convention entered into force in Brazil on May 29th 1994 (90 days after its ratification by the National Congress).

### Alignment with UNDP Assistance Framework

14. UNDP provides assistance to Brazil under the Development Assistance Framework 2012-2015, which is currently under preparation. It is being prepared in cooperation with the Brazilian Cooperation Agency (ABC), taking into account the United Nations CCA and the UNDAF and focuses on the areas in which UNDP has a clear comparative advantage within its mandate. The assistance of UNDP in Brazil translates into project initiatives related to Climate Change to promote sustainable livelihoods and decrease the vulnerability of local populations. Energy efficiency and the adoption of cleaner technologies are pursued within this context. The proposed Enabling Activity project will provide the necessary information on GHG emissions for all relevant sectors of the national economy. As such, it will establish baseline information as input for initiatives within UNDP's portfolio that contribute to curbing - directly or indirectly- GHG emissions. Relevant projects include: Sugarcane Renewable Electricity; Fuel-Cell Bus, Energy Efficiency in Buildings; Renewable CO<sub>2</sub> Capture and Storage from Sugar Fermentation Industry in Sao Paulo State; and other initiatives under implementation.

### Context and global significance: environmental, policy and institutional

15. Brazil is the largest country in South America, with an area of nearly 8.6 million km<sup>2</sup> and the fifth largest in the world. 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 where annual rainfall rates are low. With its vast size and geographical position, Brazil is one of the most important repositories of the world's forests and biodiversity, comprising the following biomes:

- the Amazonian Rainforest, covering approx. 40% of the country (3.5 million km<sup>2</sup>)<sup>3</sup>;

<sup>3</sup> Of which 2 million km<sup>2</sup> is composed of dense forest and 1.1 million km<sup>2</sup> of open forest.

- a large savannah area, the “Cerrado” (2.5 million km<sup>2</sup>);
- a semi-arid region, the “Caatinga” (over 1.5 million km<sup>2</sup>);
- the remainders of the Atlantic Forest; and
- the important swamp region, the “Pantanal” (approx. 140,000 km<sup>2</sup>).

16. Although historically agriculture and LULUCF have accounted for the larger share of Brazil’s GHG emissions, the preliminary results of the TNC indicate an important shift in emissions profile (Figure 1). This change is mainly due to actions aimed at controlling deforestation in the Brazilian Amazon, posing a new challenge to the GoB, since the current emissions scenario shows a relative increase in the energy sector emissions.

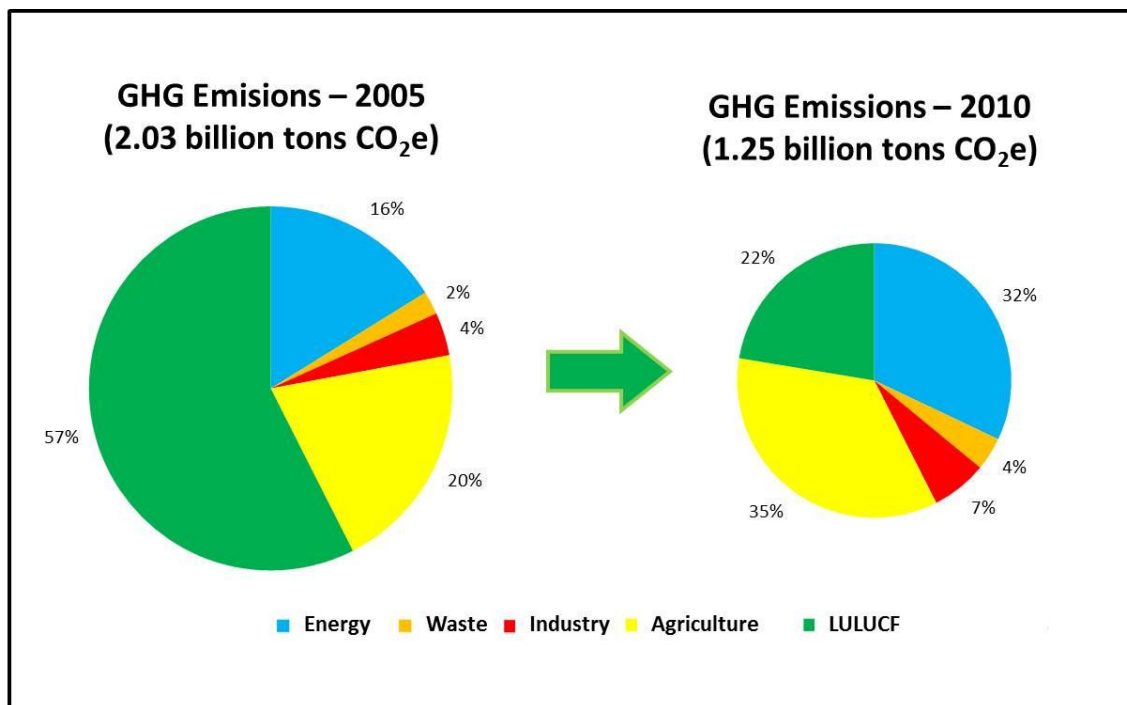


Figure 1 – Brazilian GHG emission profile, 2005 and 2010 (preliminary result of the TNC’s Inventory)

### Initial National Communication

17. The first UNDP/GEF Enabling Activity project allowed Brazil to prepare its Initial National Communication (INC), which 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 INC assessed the most important sources and sinks of GHG in Brazil from the following sectors: (i) energy, (ii) agriculture and livestock, (iii) industry; (iv) land use change and forestry (LUCF); and (v) waste treatment.

18. Brazil finalized all background reports<sup>4</sup> and submitted its Initial National Communication to the UNFCCC on December 10th 2004, at COP-10. Brazil faced several obstacles in preparing and submitting its INC on account of technical and budgetary reasons. Being the preparation of the initial inventory by itself a complex exercise that asked for new work approaches and methodologies, there was a great lack of emission factors and activity data for several greenhouse gases and sectors. Since the UNDP/GEF EA Project ended in December 2000, the established

<sup>4</sup> Available at [http://www.mct.gov.br/clima/ingles/comunic\\_old/invent1.htm](http://www.mct.gov.br/clima/ingles/comunic_old/invent1.htm).

Brazilian Global Climate Change Coordination office had to continue its activities relying on the limited federal budget allocated to climate change during 2001-2004. Staff was accordingly reduced, which caused additional delays in the preparation of the National Communication.

19. The first UNDP/GEF EA project has been fundamental to build capacity in the country: more than 150 institutions and 700 experts from different sectors and regions of Brazil were engaged in the Project. The Ministry of Science, Technology and Innovation, responsible for its implementation, succeeded in organizing a “country team” including specialists in charge of assessing data and verifying the quality of information provided by the institutions involved.

### **Second National Communication**

20. Once Brazil presented its INC to the UNFCCC, new support was requested from the GEF in order to assist in the preparation of the Second National Communication (SNC). This second UNDP/GEF EA Project started in February 2006<sup>5</sup> and envisaged extending the coverage of the annual Brazilian Inventory of anthropogenic GHG emissions and removals to the period 1990-2000. It focused on sectors/gases that have a significant share of GHG emissions and/or present a large degree of uncertainty. It enlarged the scale and scope of activities undertaken, included vulnerability and adaptation (V&A) assessments, carried out studies on possible V&A measures and on downscaling of global circulation models (using a regional model); moreover, it enhanced the institutional capacity for implementing the Convention in Brazil. The SNC showed a considerable increase in the number of institutions and experts involved and prove to be essential for the continuation of the “country team” approach<sup>6</sup>.

21. It should be noted that the time gap between the INC and the SNC adversely affected the process of preparation of NCs in Brazil. The breakdown of the established team not only caused further delay in the finalization of the INC, but also made it impossible to provide adequate support to keep on-going projects afloat. In spite of Brazil’s own contributions, additional financial support through GEF Enabling Activities is still needed to guarantee the successful implementation of the UNFCCC in the country.

### **Third National Communication**

22. A new support was requested from the GEF to assist in the preparation of the Third National Communication (TNC). This third UNDP/GEF EA Project started in November 2010 and envisaged extending the coverage of the annual Brazilian Inventory of anthropogenic GHG emissions and removals to the period 2000-2010. It focused on sectors/gases that have a significant share of GHG emissions and/or present a large degree of uncertainty. Furthermore, the TNC will present data from scenarios generated by a climate model (BESM) that will support the analysis of sectoral impacts and vulnerabilities. The TNC final document will be submitted to the UNFCCC in December 2014.

23. The TNC aims to improve the available emission data by conducting targeted research and strengthening the technical capacity of institutions to cope with climate change mitigation and adaptation. To meet this end, Rede CLIMA has contributed very substantially to generate and disseminate scientific knowledge to the different sectors involved in the emissions inventory, besides conducting research related to climate models.

24. The Government of Brazil considers the preparation of NCs as a highly valuable exercise and has put substantial resources and efforts into it. Many institutions and specialists have been

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<sup>5</sup> 2006 was the year of first disbursement.

<sup>6</sup> Which is in line with UNFCCC decision 2/CP. 7, paragraphs 1 (c), 3, 4 and 5 of decision 6/CP.7, and decision 6/CP.8

trained and institutional capacity has been built. With the TNC nearing completion however, much work remains to be done; moreover, Brazil is a huge country with large regional disparities, which represents an enormous challenge in terms of data gathering. A new Enabling Activity project is therefore required to assist Brazil in the preparation of its Fourth National Communication, which shall tackle the remaining barriers for data collection, processing, analysis and dissemination.

#### **Fourth National Communication (4NC) and Biennial Update Reports Project (BUR)**

25. Even though the INC and SNC have covered all sectors indicated by the IPCC, emphasis has been given to the sectors that were believed to require intensive, country-specific research. In the case of Brazil, land use, land-use change and forestry (LULUCF) and agriculture were once identified as the largest GHG emitters. Nonetheless, a change in the country's emissions profile has been observed in the recent years, according to preliminary results of the TNC, which can be attributed to the national effort undertaken to contain the deforestation of the Amazon. Then, according to the relative importance of LULUCF, agriculture and energy sectors in the total GHG balance of Brazil, it is necessary to obtain more accurate information for activity data and emission factors, in order to reduce uncertainties of emissions estimates.

26. The proposed Fourth National Communication Project (4NC) will endeavour to acquire a more profound understanding of the driving forces behind the GHG emissions related to these sectors as input for the design of adequate development policies and policy instruments. The 4NC represents a strategic asset for the Government of Brazil so as to produce reliable input information for the elaboration of adaptation strategies based on a more precisely focused vulnerability assessment in the key sectors.

27. The INC covered the inventory of anthropogenic GHG emissions over 1990-1994; the SNC covered the period 1990-2000; and, the TNC will cover 2000-2010. The proposed Fourth National Communication EA Project envisages extending coverage to the period 2010-2014 and improving the existing time-series from the previous NCs for key sectors.

28. It further pursues to improve the performance and accuracy of downscaling methodologies for climate General Circulation Models (GCM) applied to Brazil, which will enable reducing uncertainties in V&A assessments in different sectors. Brazil's description of national circumstances will be updated, as well as the definition of steps envisaged to implement the Convention. Finally, the project will enhance the present institutional capacity and include activities related to education and awareness building.

29. The BURs to be delivered in 2016 and 2018 will contain the following information: national circumstances and institutional arrangements; the national inventory of GHG emissions updated (following the guidelines of the Revised 1996 IPCC Guidelines, the GPG LULUCF 2003, the decision 17/CP.8, considering that the years of the inventory must respect the maximum interval of 4 years); mitigation actions and their effects (by providing assumptions and objectives and specifying stages of execution); limitations and gaps; financial, technological and capacity needs; support received; MRV (measurement, reporting and verification) for domestic NAMAS internationally supported; support received for the preparation and submission of BURs; and other relevant information.

#### **Scientific Technical Assistance**

30. Under the proposed 4NC Project GEF resources will be allocated for providing Scientific Technical Assistance (STA) to Brazil in order to enhance its ongoing R&D programme on climate and climate impact modelling (see below). This support is instrumental for delivering the envisaged sectoral V&A assessments under the 4NC. This effort was initiated in the TNC, which

has generated unprecedented results for sectoral V&A analysis, although there are still aspects to be improved in the 4CN.

31. The Brazilian Research Network on Global Climate Change (Rede CLIMA) was launched in 2007 with the aim to generate and disseminate knowledge to enable Brazil to face the challenges of climate change more adequately. The Steering Committee of Rede CLIMA is composed of representatives from the following institutions:

- Ministry of Science, Technology and Innovation;
- Ministry of Environment;
- Ministry of Foreign Affairs;
- Ministry of Agriculture, Livestock and Food Supply;
- Ministry of Health;
- Ministry of Cities;
- Ministry of Mines and Energy;
- Ministry of National Integration;
- Brazilian Academy of Sciences;
- Society for Advancement of Science;
- Brazilian Forum on Climate Change;
- National Council of State Secretaries for Science, Technology and Innovation Affairs;
- National Council of Foundations for Research;
- National Confederation of Industry;
- Ministry of Transport;
- Ministry of Development, Industry and Foreign Trade;
- National Council for Scientific and Technological Development;
- and, Brazilian Innovation Agency.

32. Rede CLIMA represents an important step forward towards integrating national experts and expertise on climate issues and enhancing the effectiveness of scientific research programs. Although data on the conversion of land use were reliable in the SNC, there was uncertainty about the estimate of the biomass content, which varies greatly from one region to another - even in different parts of the Amazon rainforest. Regarding the TNC, the participation of researchers from Rede CLIMA is ensuring more reliable results for the inventory of GHG emissions since the outcome of their studies are being used to improve and expand the activity data and emission factors related to LULUCF and agriculture sectors, for example.

33. For the 4CN, Rede CLIMA will continue the efforts started in the TNC, focusing on:

- Studies on the impacts of global and regional climate change in Brazil, with emphasis on the country's vulnerability to climate change;
- Development of studies on adaptation alternatives of social, economic and natural systems to climate change in Brazil;
- Preparation of studies to generate refined data and emission factors which are appropriate to the Brazilian reality, by undertaking periodic national inventories of GHG emissions.

34. In the future, it is intended that Rede CLIMA can effectively contribute to the design and implementation of observational systems to detect impacts of climate change, assigning its causes and its effects on human and natural systems.

## **The Brazilian Earth System Model – BESM**

35. The Brazilian Earth System Model (BESM) is being developed at the National Institute for Space Research (INPE), in collaboration with Research Institutes and Universities in Brazil and international cooperation. The purpose of the BESM project is to establish a global earth system model suitable to long-term climate change projections. The BESM is based on the main structure of the Center for Weather Forecasting and Climate Studies – CPTEC climate model (which is used for seasonal climate forecasts), but includes more realistic representations of phenomena acting on a larger time-scale: sea-ice transitions, aerosols and atmospheric chemistry, dynamic vegetation, CO<sub>2</sub> variability, and river discharge on the oceans. The first version of BESM-OA model was used to generate decadal predictions according to the CMIP5 protocol, with more than 2,500 years of model outputs in ensemble mode, and which has allowed INPE to participate for the first time in the IPCC AR5<sup>7</sup> with global climate scenarios. The next version of BESM is being developed to encompass higher horizontal and vertical resolution of both its ocean and atmosphere component models, as well as to incorporate new physical parameterizations, in order to resolve South American topography and biomes more accurately, as well as to represent the fluxes of fresh water by the Amazonian rivers (e.g. Amazon, Orinoco, Plata rivers) on the Atlantic Ocean circulation, biogeochemistry, and CO<sub>2</sub> fluxes.

36. Work on the BESM is being conducted with financial resources from the Brazilian government and various funding agencies in Brazil<sup>8</sup>. Given its potential to generate detailed assessments of climate change effects, vulnerability and adaptation for Brazil and neighbouring South American and African countries, GEF support under the TNC Project was requested to prepare the BESM for this task and produce the envisaged outputs. The requested funding will be used to conclude the scientific assessment of various aspects of climate change modelling, while preparing Brazil to contribute to the upcoming CMIP6 project. The delivered global climate change scenarios will allow for a careful uncertainty analysis using the ensemble model technique. Climate change scenarios will be generated using the current super computer installed at CPTEC, as well as the next supercomputer that shall be purchased by the Ministry of Science, Technology and Innovation.

37. High resolution (e.g. 100 Km grid and less) global climate change scenarios generated by BESM shall be applicable not only to Brazil, but also to other South American, Caribbean and African countries, as the model shall incorporate tropical features relevant for those countries. Also, the large volume of digital files containing climate change scenarios shall be easily accessible to other countries beyond Brazil, through the use of the Earth System Grid Federation (ESGF) framework developed by the CMIP5 Project, and being installed in INPE's supercomputer system. The ESGF infrastructure being built at INPE will also facilitate any user in South America and the Caribbean to access the wealth of CMIP5 (and in the future, CMIP6) scenarios generated by all the research centers participating in the CMIP project.

## **The Regional Earth System Model – RESM (former Eta-model)**

38. Global coupled ocean-atmosphere models are used to generate Global Climate Change scenarios. Unfortunately, global models are limited to rather coarse resolutions when generating climate simulations for over hundreds of years with computational efficiency. However, studies for assessing vulnerability and climate change impact require a more detailed resolution at the Earth's surface. Regional Climate Models combine the calculated global climate change

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<sup>7</sup> Nobre, P. and co-authors, 2013: Climate simulations and change with the Brazilian Climate Model. *Journal of Climate*, 26, pages 6716-6733. DOI: 10.1175/JCLI-D-12-00580.1

<sup>8</sup> US\$ 1.5 million to develop the Brazilian Earth System Model (4 years) funded by the Fundação de Amparo à Pesquisa do Estado de São Paulo – FAPESP (Science Foundation in the State of São Paulo).

conditions with detailed land surface characteristics on a smaller scale and allow for modelling of local effects. The RESM is a full atmospheric regional model in use by CPTEC since 1997 for operational weather and seasonal forecasts. The model has been adapted to work as a Regional Climate Model (RCM) and has been validated as such. The RCM RESM was used to produce future climate change scenarios under the SNC and TNC. Planned improvements of this version of the RESM RCM include dynamic vegetation and land use changes. Atmospheric models assume a type of vegetation cover that does not change in time. However, the vegetation cover may change in type and density, which may considerably influence local climate modelling. Dynamic modelling allows for including these effects. Quantified insight into the uncertainty of projections has been limited. Under the 4NC it is envisaged to operate an enhanced version of the RESM, with perturbed physics members, forced with at least 4 global climate models, including the BESM. It is expected that the results will fill the gaps in the existing scenarios, reduce error and increase the spatial resolution from 20x20 km<sup>2</sup> to 10x10 km<sup>2</sup>. For the study of climate change impacts on cities, a very high resolution version of the RESM should simulate climate at about a 4-5km resolution over major city areas, while including an improved representation of urban area surface heat fluxes. Furthermore, more detailed projections are expected for mountain regions and valleys, and also land cover, which are needed for impacts assessments. The regional model should be coupled to ocean model to provide more detailed information on sea surface temperature in the oceans adjacent to South and Central America. A radiation scheme that includes more GHG gases and aerosols will replace the current radiation scheme. Continuous improvement of the model on the production of clouds and precipitation will be carried out.

39. The coupling of the RESM at higher resolution with impact models provides insight into the evolution of variables (e.g. crop productivity, crop disease, energy production, and human health) under different climate change scenarios. Differently from the TNC, the identification of adaptation options under the TNC will not only be based on bio-physical impacts but also on the human aspects of climate change. Based on the vulnerability assessment of identified sectors, application models will be enhanced for improved analysis. As a result of more accurate and sector-specific information, response measures can be designed and implemented in a more focused and cost-effective manner. This knowledge is extremely relevant for Brazil, but can expectedly be applied as well to other countries in Latin America, the Caribbean and Africa.

### **Metrics of Greenhouse gases**

40. The effect of different greenhouse gases to global warming (GHG metrics) as suggested by the UNFCCC (the GWP) is considered controversial by many experts in Brazil. In particular, it seems to overestimate the contribution of methane to climate change, which is particularly relevant in Brazil given the predominant influence of the agriculture and LULUCF sectors. Therefore, as previously performed for the TCN, the 4NC and the BURs will intend to identify the key categories in a robust way and show the effect of the choice of metrics on the results<sup>9</sup>.

41. The SNC included an assessment of the contribution of forest and grassland conversion and the abandonment of managed lands to overall Brazilian emissions; besides a review of the use of default and international data, which were expected to be inappropriate. The assessment followed the most detailed methodology included in the IPCC Good Practice and Guidance 2003, departing from satellite imagery. Though the data on land use conversion by itself are reliable, the problem is to estimate the biomass content, which varies extremely from region to region -

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<sup>9</sup> No formal key category analysis was conducted under the First National Communication. A Tier 1 Key Category analysis was implemented in the SNC. For the TNC, Key Category analysis is being carried out following Tier 1 and Tier 2 methodologies, likewise will be made for the 4NC.

even for different parts of the Amazonian forest. The TNC is enhancing and extend the studies on activity data and emission factors related to these sectors, which will facilitate inventory preparation of the 4NC and will ensure more reliable results in the future.

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## **B. STRATEGY**

42. The proposed Enabling Activity Project will assist the Government of Brazil to perform the activities necessary to prepare the Fourth National Communication and the Biennial Update Reports to the Conference of Parties in accordance with the UNFCCC. The project comprises six main components with related outcomes, outputs, activities and sub-activities:

- I. National GHG inventory 2011-2014;
- II. National Circumstances, Envisaged Steps for the Convention Implementation, and other relevant information;
- III. Vulnerability assessment and adaptation measures;
- IV. Public Awareness and Education Strategy in Place;
- V. Publication and submission of the Fourth NC
- VI. Preparation and submission of Biennial Update Reports (BUR) in 2016 and 2018.

43. The 4NC Project builds upon the results of the First, Second and Third National Communication and related human and institutional capacities in Brazil, while benefiting from recent knowledge and methodologies.

### **Project goal and objective**

44. The project “Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)” has the following goal and objective.

- *The project goal is:* “To enable the Government of Brazil to enhance available emission data, performing targeted research, and strengthening technical capacity and institutions to address both mitigation and adaptation.”
- *The project objective is:* “To assist the Government of Brazil to perform the activities necessary to prepare the Fourth National Communication and Biennial Update Reports to the Conference of Parties in accordance with the UNFCCC.”

### **Beneficiaries**

45. Being an Enabling Activity, beneficiaries within target groups are not directly addressed. The Government of Brazil, including the Executing Entity Ministry of Science, Technology and Innovation (MCTI), and the institutions involved in the preparation of the 4NC and the BUR will benefit directly from the Project through the proposed TA and STA activities.

### **Environmental benefits**

46. No direct environmental benefits are associated to the proposed Enabling Activity Project. The Project will generate indirect local and global environmental benefits through the studies and information that will be the basis for efforts to reduce GHG emissions as well as to adapt and to increment resilience to climate change impacts. The enhanced inventory of GHG sources and sinks will provide input to devise more efficient and effective policies and new legislation at the Federal and state levels.



## **Project components<sup>10</sup>**

47. The UNDP/GEF Fourth National Communication and Biennial Update Reports Enabling Activity in Brazil will consist of the following outcomes and outputs.

### **Outcome #1 National GHG Inventory is improved and updated**

#### ***Output #1.1 Procedures for inventory development and management to enhance the current system evaluated and adjusted***

48. The 4NC will focus on improving and refining the data and emission factors of the LULUCF, agriculture and energy sectors, due to their relevance in Brazil<sup>11</sup>.

49. At present, the TNC is already working with Rede CLIMA in the development of a national emission factor database for key sources and country specific emission factors. This database will be validated with detailed and accurate emission factors in order to be available for the 4NC preparation. Based on the experience and capacity built during the previous NCs, Tier III methods and models will be adopted, as appropriate, for the preparation of the GHG inventories of the 4NC. The usage of Tier III will involve development, validation and application of models for different sectors and regions.

50. The institutional framework for managing such a database is currently being discussed along with its technical specifications, under the coordination of the MCTI. At the end of the TNC preparation, a simplified database will be available containing the results of emissions by gas, sector, activity, state, year. It is expected that during preparation of the 4NC, an enhanced database infrastructure will be developed.

#### ***Output #1.2 Best practices in the elaboration of inventories adopted***

51. This output includes the development and implementation of quality control and quality assurance procedures (QC/QA) for the information and data collected. Archiving procedures will be updated to improve transparency and data security<sup>12</sup>. This project component will further include a Key Category analysis and an Uncertainty Analysis following the IPCC Good Practice Guidance.

52. The development of the database system will also contribute to the establishment and implementation of sustained QA/QC procedures as recommended by the IPCC good practice guidance. Brazil is confident that the system will help reduce uncertainties of the next GHG inventories.

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<sup>10</sup> Please refer to the Annex for a detailed description of envisaged project activities and involved institutions.

<sup>11</sup> For the energy sector more tests will be carried out in collaboration with the Ministry of Mines and Energy in order to determine emission factors from fuels. Concerning agriculture, the 4NC aims to improve country specific emission factors for the following subsectors: livestock enteric fermentation and manure management, promoting a regional assessment of manure management systems; N<sub>2</sub>O from agricultural soils, using the results of complete studies related to emission factors for the cultivation of rice for different regions, initiated in the TNC. With regard to LULUCF, in the INC, the satellite images covered only 50% of the national territory. For the TNC, satellite images are being used for all Brazilian biomes in order to obtain emission estimates; and national data includes the biomass above and below ground (also using data from literature). The 4NC is intended to estimate emissions and removals based on images taken at a higher frequency so as to obtain more accurate data from the transition matrix of categories/subcategories of land use built in previous inventories. A quantitative assessment of uncertainties in the inventories will also be carried out.

<sup>12</sup> Please note that the SNC and TNC have already developed QA/QC procedures during the GHG inventories. It is expected that these will become fully operational under the TNC. The previous experience of the SNC and TNC will serve as a basis for the design and implementation of a full QA/QC plan to be consolidated by the 4NC.

***Output #1.3 National GHG Inventory updated to 2014 (1990-2014) in the energy, industry, agriculture, land use change and forestry, and waste sectors***

53. This project component aims at updating and rendering more accurate the GHG inventories for the mentioned key emission sectors. The selected sectors account for a significant share of the national emissions of GHG gases and/or exhibit a large data uncertainty. Priority will be given to the agriculture, LULUCF and energy sectors, which have been identified at the TNC as most relevant for Brazil. A better understanding of the LULUCF sector will be achieved by a full application of Tier 3 methodology<sup>13</sup>. More accurate estimates of GHG emissions will be obtained through the interpretation of satellite images for the whole territory of Brazil in order to identify land-use transitions. In accordance with good practice, the Project will seek to identify and fill in category gaps. This component will extend data coverage to the period 2011-2014<sup>14</sup> (based on annual time-series) and enhance consistency of existing data by applying updated methods and information. Finally, this output provides resources for strengthening the national structure established for the estimation of GHGs.

**Outcome #2 National Circumstances and Envisaged Steps for the Convention Implementation. (Period 2014 to 2017)**<sup>15</sup>

***Output #2.1. Report on national and regional development priorities and institutional arrangements.***

54. This project output will prepare a report on national circumstances. Under this component, efforts will focus on having a better understanding of the Brazilian climate change context, including the national actions to address climate change and related challenges. Data referring to geographic, environmental and socioeconomic aspects will be updated in a development context. This component will cover the relevant institutional arrangements for the preparation of the 4NC.

55. Under this component, Brazil will assess the following aspects: demographic and socioeconomic features, such as occupation patterns and rural-urban population; economic structure of the country, information on social development such as poverty level, educational level; forest categories and soil types; river basins; climatic systems; and rainfall and temperature trends. Furthermore, a report will be prepared covering the existing institutional arrangements for the preparation of the GHG inventory.

56. Brazil has made substantial progress on the legal and institutional framework for climate change policies. The 4NC will describe such progress, especially concerning the National Plan on Climate Change. It will also include a description of identified challenges in terms of institutional arrangements and scientific knowledge.

***Output #2.2. Report on needs, constraints and gaps and other relevant information.***

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<sup>13</sup> As described in the IPCC GPG 2003.

<sup>14</sup> The UNFCCC Reporting Guidelines for the 4NC do not define a specific base year. Brazil will include in the 4NC an inventory for the period 2011-2014 on annual basis, in accordance with the provisions of Article 4.1(a) of the UNFCCC. The time-series for the period 1990-2010 will be updated in accordance with the IPCC Good Practice Guidance.

<sup>15</sup> This component will also include detailed descriptions of some relevant information: Steps taken or envisaged to mitigate climate change; Activities related to technology transfer; Climate Change research and systematic observations; Research to adapt to and mitigate climate change; Information on education, training and public awareness; Information on capacity-building at the national, regional and sub-regional levels; Efforts to promote information sharing; Constraints and gaps, and related financial, technical and capacity needs.

57. The 4NC will include the special needs and concerns arising from the adverse effects of climate change and/or of the implementation of response measures.

***Output #2.3. Report on measures for climate change mitigation.***

58. This output will include the description of programs containing measures or been elaborated in Brazil regarding climate change mitigation and adaptation and other information considered relevant for achieving the objective of the Convention in Brazil. Other important topics for the Convention are transfer of technologies, research and systematic observation, education, training and public awareness, capacity building activities and information, and networking related to climate change. Most of these activities have direct or indirect impacts in reducing or preventing anthropogenic GHG emissions. This project component will describe the steps envisaged -or already taken- by Brazil to comply with its commitments under the Convention, addressing both mitigation and adaptation measures.

**Outcome #3 Vulnerability Assessment and Adaptation Measures.**

***Output #3.1. Documented climate scenarios based on the Brazilian Earth System Model (BESM) and downscaling with the Regional Earth System Model (RESM – former Eta-model).***

59. The 4NC intends to make use of the results provided by the Brazilian Earth System Model (BESM). This model can support climate change studies at global and continental scales by generating new global climate change projections, with resolutions of the order of 80-km spatial resolution in the atmosphere and 25-km resolution in the ocean for at least 3 emission scenarios, and various ensemble members. Such scenarios shall encompass the time periods of 1800 and 2100. It is expected to allow the evaluation of continental and regional scale changes on the precipitation, temperature, and severe weather frequency, both for the current climate (1960-2010) and the future climate scenarios (2015-2100).

***Output #3.2. Impact assessment of the atmospheric chemistry component of BESM; impact assessment of surface vegetation fires simulated by the fire module of BESM; impact assessment of projected large scale climatic fluctuations of rainfall on river runoff variations and its impacts on ocean carbon cycles and coastal erosion.***

60. Impact assessments will be carried out with regard to agriculture, water resources, energy, economy, health, biodiversity and ecosystems. The atmospheric chemistry component of BESM shall allow for the evaluation of impacts of surface vegetation fires simulated by the fire module of BESM's surface model. The evaluation of atmospheric composition and its effects on global clouds' optical properties and the hydrological cycle are also envisaged in the BESM. The continental hydrology developed in the BESM will allow researchers to evaluate projected large scale climatic fluctuations of rainfall on river runoff variations and its impacts on hydroelectric generation, fluvial transportation, human water supply, ocean carbon cycles and coastal erosion.

***Output #3.3. Regional and sectoral vulnerability analysis (using vulnerability indexes) and generation of maps, under various emission scenarios and time slices, in GIS format.***

61. This component encompasses activities that will evaluate Brazil's vulnerability to the threats associated with global climate change.

62. Vulnerability indexes shall be used to map and perform regional and sector analysis under various emission scenarios and time frames. Such indexes shall include the probability distributions of droughts and floods, the occurrence of severe weather, heat and cold waves, human health hazards, natural disasters, impacts on natural ecosystems, among others. The

maps are expected to be built in GIS format, allowing and promoting their use for public policy planning, civil defense, impacts assessments and economic measures for adaptation.

***Output #3.4. Network of data collection devices for the assessment of the human perception of climate variability (extreme events) and change, to be used as a metric for adaptation policies.***

63. One of the major risks and opportunities associated with climate change is the lack of public awareness concerning the real dimensions and related challenges. Brazil believes in promoting scientific exchange among specialists and diffusing scientific findings to society. This will enable scientific knowledge to promote a change in current paradigms and adequately interact with the policy making community. The component will also produce a network of data collection devices for the assessment of the human perception of climate variability (extreme events) and change as an input to devise adaptation policies.

***Output #3.5. Adaptation measures for the key sectors identified.***

64. The studies concerning agriculture, cities, water resources, energy, economy, health, biodiversity and ecosystems impacts will also assess adaptation opportunities in order to develop adaptation policies and measures.

**Outcome #4 Public Awareness And Education Strategy.**

***Output #4.1. Relevant documents and policy briefs published and disseminated.***

65. This component aims at strengthening the institutional capacity of the Brazilian Government to promote public awareness on climate change issues.

***Output #4.2. Website of the Ministry of Science, Technology and Innovation updated with information on GHG Inventories, legislation, scientific knowledge and other climate change issues.***

66. Information generated by the project will be disseminated, addressing different aspects such as legislation, scientific knowledge, governmental and non-governmental actions, GHG emissions estimates, and ongoing adaptation and mitigation initiatives. Such information shall be presented in adequate formats to the different audiences – students, specialists, governmental actors, civil society organizations and the general public – including printed materials, electronic media, besides meetings and seminars.

***Output #4.3. Workshops and seminars organized and participation in public events in order to disseminate information on climate change issues, presenting main findings of the project.***

67. Brazil has identified this component as a priority, as this strategy is needed to address aspects not covered by previous NCs. The component is expected to encompass the publication and distribution of relevant documents, the organization of workshops and seminars focused on stakeholders of different sectors as well as the participation of the 4NC team in public events in order to disseminate information on climate change issues and to present the main findings of the project.

**Outcome #5 Publication and Submission of the Fourth National Communication**

***Output #5.1. Publication of the 4NC hard copy and alternative media in Portuguese and English.***

68. The 4NC will be presented to the UNFCCC by December 2018. This output will ensure the publication of the 4NC in hard copy and alternative media in Portuguese and English.

***Output #5.2. Reference Reports of the National Inventory published for the different sectors.***

69. This output will ensure the publication of Reference Reports of the National Inventory for the different sectors.

**Outcome #6 Publication and Submission of Biennial Update Reports**

***Output #6.1. BURs for 2016 and 2018 published and submitted, including update of information regarding National Circumstances, National GHG Inventory, Mitigation actions, constraints and gaps, support received and domestic MRV.***

70. Brazil's BURs, in accordance with Decision 2/CP.17 will contain: information on national circumstances and institutional arrangements; information on the national GHG inventory, including a national inventory report; information on mitigation actions and their effects; information on constraints and gaps, and related financial, technical and capacity needs; information on the level of support received to enable the preparation and submission of BURs; information on domestic measurement reporting and verification; and other relevant information. Data gathering and analysis work, as well as consultations with relevant institutions involved in the national communications preparation, will be carried out in order to produce comprehensive and complete BURs.

71. The 2016 BUR will be a stand-alone update report and its GHG Inventory will extend to year 2012.

72. The 2018 BUR will be presented in conjunction with the Fourth National Communication as a summary of its parts, in line with Decision 2/CP.17. In that case, the GHG Inventory will extend to year 2014.

**Sustainability and replicability**

73. The implementation of the National Plan on Climate Change in December 2008 and the enactment of Federal Laws No. 12,144/2009 and No. 12,187/2009 indicate that the Brazilian Government is strongly committed to controlling the national GHG balance and to devise measures to cope with the impacts of climate change in the national territory. The NCs are key instruments in support of such policy. Notwithstanding, the federal budget outlays allocated to implement the activities needed for implementing the Convention in Brazil are limited and only allow to move forward at a slower pace. The Brazilian Climate Change Fund is an important step forward but is targeted at direct investments to mitigate or adapt to climate change. Resources for NC-like activities will therefore rely mainly on R&D budgets, which are scarce under the circumstance of pressing social and development priorities. UNDP/GEF support through the proposed Enabling Activity is therefore highly important in Brazil to proceed swiftly with the implementation of the Convention and the NCs.

74. On the other hand, NCs in Brazil benefit from more than 10 years of a successful partnership between the Brazilian government and UNDP. Broad consultation processes have occurred involving government, academia, private sector and civil society organizations so as to ensure the entry of specialized state-of-the-art consensus and to design interventions. Throughout Brazil, a large group of experts and institutions have been involved in NCs, especially through the active participation of Rede CLIMA in the TNC, which ensured consistent scientific results to be submitted to the UNFCCC. This strategy will be maintained and enhanced in the

4NC. Strategic partnerships with stakeholders are fundamental for the implementation of participatory planning and implementation mechanisms and for creating a platform to support a national climate change strategy in the long term. Various institutions involved in the INC, SNC and TNC have allocated their own human and financial resources in the development of climate change-related activities, which demonstrates that climate change is increasingly included as an area of R&D.

75. From the point of view of replicability, the project will generate improved approaches, methodologies and tools, especially regarding the GHG inventory and vulnerability and adaptation assessment, which will be useful to share information with peer organizations, while providing important inputs for the scientific literature review periodically undertaken by IPCC.

### **Global Environmental and National Socio-Economic Benefits**

76. No direct environmental benefits are associated with the proposed Enabling Activity Project although indirect global environment benefits are expected since the studies developed and information provided will be the basis for efforts to mitigate Brazil's GHG emissions and enhancement of sinks, and to reduce its vulnerability to impacts of climate change.

77. The 4NC of Brazil will address gender concerns by building capacities of both men and women (and children) to equally cope with the adverse impacts of climate change and reduce negative effects on national welfare and environmental sustainability. More specifically, the project will: 1) systematically analyze and address the specific needs of both women and men; identify targeted interventions to enable both genders to participate in – and equally benefit from – development efforts; and, 2) address any gaps in attaining gender equality particularly in the context of adaptation to impacts of climate change by designing strategies and policies to close these gaps. This can be accomplished during the workshops and seminars as well as with the research work undertaken for the development of BESM.

### **Stakeholders, risk and assumptions**

78. As previously mentioned, the Brazilian Research Network on Global Climate Change (Rede Clima) is expected to be involved in the preparation of the 4NC and BURs, through its numerous research institutions and universities. The Network produces information to support the formulation and follow up of public policies on climate change as well as the Brazilian position in negotiations under the UNFCCC.

79. Rede Clima generates and disseminates knowledge about causes and effects of global climate change in 13 sub-networks: Agriculture, Biodiversity and Ecosystems, Cities, Natural Disasters, Regional Development, Economy, Renewable Energy, Modeling, Oceans, Water resources, Health, Environmental Services and Coastal Zones.

80. The Network is based at the National Institute of Spatial Research – INPE, in São José dos Campos (State of Sao Paulo) and is comprised of a Board of Directors, a Scientific Committee, and an Executive Secretariat in support of a network of public institutions such as research institutions (INPE, INPA, MPEG, FIOCRUZ and EMBRAPA) and Universities (e.g. UnB, UFC, UFPE, UNICAMP, COPPE/UFRJ, USP, UFRGS, UFSC).

81. Besides the institutions that are part of Rede Clima network, other institutions may be involved in the preparation of the 4NC and BURs, as listed in Annex C. The 4CN will address all national initiatives for climate change, including the National Plan for Adaptation which took into account active participation of civil society in drafting the document. In addition, representatives of civil society will have their participation through the Brazilian Forum on Climate Change.

Moreover, public consultations make available all the document of 4CN and BURs for consideration and submission of contributions from any interested entity, involving different partners in this process, such as stakeholders from the private sector and civil society organizations, including those representing indigenous people.

82. No major risks can be identified in the implementation of this project since the Government of Brazil is strongly committed to its obligations under the Convention and in particular to fulfilling reporting requirements. Nevertheless, administrative and financial risks with a low magnitude were identified:

- *Coordination with stakeholders*: delays due to coordination with a large number of stakeholders from different sectors may cause delays in project implementation. However this risk will be minimized by building on partnership agreements and institutional collaboration established when preparing the TNC. The PIF was presented on time to allow the continuity of the National Communication process, thus ensuring that the 4NC can initiate as soon as the TNC is presented to the UNFCCC. Commitment from all stakeholders will also be maintained through effective coordination and communication between stakeholders and Government;
- *Delays in the preparation of reports*: the risk is low given Brazil's experience in preparing national communications and the expected level of GEF financing for this project;
- *Restricted information base on climate change*: the project will help mitigate climate change risks and support decision making related to climate change by improving the corresponding knowledge base.

#### **Coordination with other relevant GEF financed and other initiatives**

83. The project will benefit from the previous NCs funded by the GEF. The 4NC will update all information contained in the TNC, including national inventories of greenhouse gas emissions and sinks up to the year 2014.

84. Brazil is currently implementing a project also financed by the GEF and executed by the MCTI named "Mitigation Options of Greenhouse Gas (GHG) Emissions in Key Sectors in Brazil", in partnership with the United Nations Environment Program (UNEP). It shall reach completion by November 2015. The Project's objective is to assist the Government of Brazil in strengthening its technical capacity for supporting the implementation of its mitigation actions for GHG in key economic sectors (industry, energy, transportation, household and services, LULUCF, waste management and other cross-sector alternatives). It will, in sum: (i) identify mitigation alternatives and quantify respective potentials and costs, developing scenarios for 2012-2035 and 2035-2050; (ii) provide an integrated analysis of different mitigation alternatives; evaluate possible impacts of climate policies on the economy; test domestic measurement, reporting and verification (MRV) of proposed mitigation alternatives; and (iii) promote capacity-building for the implementation of mitigation actions.

85. Thus, results presented by the Mitigation Options Project, including scenario development, identification of mitigation alternatives, cost abatement projections and specific training shall provide important inputs and be reported in the 4NC and the BURs to be submitted in 2016 and 2018, respectively.

86. From the point of view of environmental sustainability, the results to be delivered by the 4NC, especially regarding the inventory and vulnerability and adaptation assessment, will provide methodological references that will be important for the formulation of future mitigation and adaptation projects, as well as important inputs for the scientific literature assessment review periodically undertaken by IPCC.

## C. PROJECT RESULTS FRAMEWORK

<p><b>This project will contribute to achieving the following Country Programme Outcome as defined in CPD:</b> Public sector and civil society institutions capacities' for policy formulation, implementation, monitoring and evaluation, focusing in particular on the most vulnerable groups, strengthened.</p>					
<p><b>Country Programme Outcome Indicators:</b> Strengthening of public policy institutional arrangements with focus on specialized studies and systems.</p>					
<p><b>Primary applicable Key Environment and Sustainable Development Key Result Area:</b> 1. Mainstreaming environment and energy</p>					
<p><b>Applicable GEF Strategic Objective and Program: Enabling Activities (CCM-6):</b> CC Enabling Activity</p>					
<p><b>Applicable GEF Expected Outcomes:</b> Fourth National Communication (FNC) and Biennial Update Reports (BUR)</p>					
<p><b>Applicable GEF Outcome Indicators:</b> Completed and submitted Fourth National Communication (FNC) and Biennial Update Reports (BUR)</p>					
Strategy	Objectively Verifiable Indicators			Source of Verification/Means of Gauging Success	Risks and Assumptions
	Indicator	Baseline	Target (End of Project)		
<p><b>Project objective:</b>  To assist the Government of Brazil to perform the activities necessary to prepare the Fourth National Communication and Biennial Update Reports in accordance with the UNFCCC.</p>	(A) Status of national GHG inventories ;	(A) TNC GHG inventory available for period 1990-1994 (INC), 1990-2000 (SNC) and 1990-2010 (TNC)	National GHG inventory for the sectors: (i) energy; (ii) industry; (iii) agriculture; (iv) LULUCF; and (v) waste for 2011-2014 produced; and time-series 1990-2010 refined	Project evaluation and official reports to the UNFCCC	<p><b>Risks:</b> No major risks have been identified in the implementation of this project since the Government of Brazil is strongly committed to its obligations under the international agreements on Climate Change and in particular to the reporting under the UNFCCC.  <b>Assumptions:</b> The Government maintains its support to implement the UNFCCC in Brazil.</p>
	(B) Status of assessment National Circumstances	(B) TNC includes assessment of National circumstances until 2013	(B) Report on National Circumstances and description of steps taken or envisaged for the Convention implementation regarding the period 2014 to 2017;		
	(C) Publication of Fourth National Communication;	(C) TNC published in December 2014	(C) 4 <sup>th</sup> National Communication fully prepared and published		



	(D) Level of institutional capacity in Brazil for education, training and public awareness related to climate change.	(D) Fragmented initiatives on education, training and public awareness	(D) At least one research group supporting education, training and public awareness initiatives		
	(E) Biennial Update Report for reference year 2012 and 2014	(E) First BUR (submitted with TNC)	(E) BUR (submitted on 2016) and BUR (2018 submitted with FNC)		
<b>Outcome 1: National GHG inventory is improved and updated.</b>	(A) Database of emission factors and activity data;	(A) Pilot database available under the SNC and TNC	(A) Procedures for inventory development and management to enhance the current system evaluated and adjusted;	Status of the preparation of the inventory report	<p><b>Risks:</b> (1) Coordination with stakeholders may cause delay since a large number of actors from different economic sectors of the society are involved. (2) Difficulty in hiring qualified people.</p> <p><b>Assumptions:</b> (1) 4NC will benefit from experience gained with INC, SNC and TNC; (2) Project can draw on a pool of experts, including Rede CLIMA researchers; (3) The Government maintains its support to implement the UNFCCC in Brazil.</p>
	(B) QA/QC plan for GHG emission data per sector;	(B) QA/QC pilot has been designed and implemented under SNC and TNC	(B) Best practices in the elaboration of inventories adopted.		
	(C) National GHG inventory for the sectors: (i) energy; (ii) industry; (iii) agriculture; (iv) LULUCF; and (v) waste; for 2011-2014 produced and time-series 1990-2010 refined.	(C) GHG inventory available for period 1990-1994 (INC), 1990-2000 (SNC) and 1990-2010 (TNC)	(C) GHG inventory available for the period 2011-2014, including refinement of time-series 1990-2010.		
<b>Outcome 2: National circumstances, envisaged steps for the Convention implementation, and other relevant information.</b>	(A) Assessment of national circumstances in Brazil;	(A) TNC (data until 2013)	(A) Report on national and regional development priorities and institutional arrangements.	Status of the report preparation	<p><b>Risks: (1)</b> Limited political support to Climate Change issues; (2) Difficulty in hiring qualified people.</p> <p><b>Assumptions:</b> (1) 4NC will benefit from experience gained with INC, SNC and TNC; (2) Project can draw on a pool of experts, including Rede CLIMA researchers; (3) The Government</p>

	B) Assessment of constraints and needs to implement the Convention in Brazil;	(B) TNC (data until 2013)	(B) Report on needs, constraints and gaps and other relevant information.		maintains its support to implement the UNFCCC in Brazil.
	(C) Identification of activities and CC measures to implement the Convention in Brazil;	(C) TNC (data until 2013)	(C) Report on measures for climate change mitigation.		
<b>Outcome 3: Vulnerability assessment and adaptation measures</b>	(A) Scenarios of "Brazilian Earth System Model (BESM)";	(A) BESM developed and RESM/CPTEC model improved with higher resolution for a larger domain in the TNC	(A) Documented climate scenarios based on the Brazilian Earth System Model (BESM) and downscaling with the RESM.	Status of the development of the scenarios and the vulnerability and adaptation report.	<p><b>Risks:</b> Several minor risks have been identified: (1) complex coordination with stakeholders may cause project delays; (2) access to supercomputers; (3) delay to generate regional climate change scenarios; (4) quality of satellite images available for analysis; (5) delays in the preparations of reports.</p> <p><b>Assumptions:</b> The Government maintains its support to implement the UNFCCC in Brazil.</p>
	(B) Climate change impact assessment for atmospheric chemistry, surface vegetation fires, and others;	(B) Limited CC impact assessment has been prepared under TNC	(B) Impact assessment of the atmospheric chemistry component of BESM; impact assessment of surface vegetation fires simulated by the fire module of BESM; impact assessment of projected large scale climatic fluctuations of rainfall on river runoff variations and its impacts on ocean carbon cycles and coastal erosion.		

	(C) Mapping of vulnerability of key sectors and regions to climate change impacts.	(C) Improved data and methodologies under TNC	(C) Regional and sectoral vulnerability analysis (using vulnerability indexes) and generation of maps, under various emission scenarios and time slices, in GIS format.		
	(D) Assessment of human perception on climate change	(D) Independent studies on human perception on climate change	(D) Network of low cost data collection devices for the assessment of the human perception of climate variability (extreme events) and change, to be used as a metric for adaptation policies.		
	(E) Identification of key sectors and regions with climate change impacts.	(E) Preliminary results of studies on climate change vulnerability	(E) Adaptation measures for the key sectors identified.		
<b>Outcome 4: Public Awareness and Education Strategy in Place</b>	(A) Assessment of policies and programs related to climate change;	(A) Revised National Plan of Climate Change and regional workshops realised for TNC dissemination	(A) Relevant documents and programs/policy briefs published and disseminated.	Project reports (4NC, evaluation report)	<b>Risks:</b> Several minor risks have been identified: (1) no interest of people to access the information; (2) difficulty to involve the general public. <b>Assumptions:</b> (1) The Government maintains its support to implement the UNFCCC in Brazil; (2) is increasing

	(B) Updated webpage from MCTI with information on 4NC;	(B) The dissemination of TNC and the inventory results available on the MCTI webpage	(B) Web site of the MCTI updated with information on GHG Inventories, legislation, scientific knowledge and other climate change issues.		people's interest for matters related to climate change.
	(C) Dissemination of results found in the preparation of National Communication	(C) Workshop's undertaken to present the results of TNC	(C) Workshops, seminars and meetings with subnational governments organized and participation in public events in order to disseminate information on climate change issues, presenting main findings of the project.		
<b>Outcome 5: Publication and submission of the Fourth NC.</b>	(A) Publication of Fourth National Communication;	(A) Previous NCs	(A) Publication of the 4NC in hard copy and alternative media in Portuguese and English, presented to the GoB;	Project reports (4NC, evaluation report)	<p><b>Risks:</b> No specific risks have been identified.</p> <p><b>Assumptions:</b> (1) The Government maintains its support to implement the UNFCCC in Brazil; (2) project stakeholders correctly understand UNDP/GEF M&amp;E principles.</p>
	(B) Publication of Reference Reports of the key sectors of the National GHG emissions Inventory.	(B) Publication of reference reports of TCN	(B) Reference Reports of the National Inventory published for the different sectors.		

<p><b>Outcome 6: Preparation and submission of Biennial Update Reports (BUR) in 2016 and 2018</b></p>	<p>(A) Publication of Second BUR.</p>	<p>(A) First BUR submitted with TNC</p>	<p>(A) BURs for 2016 published and submitted, including updates of information.</p>	<p>Project reports (BUR-2016 and BUR-2018 with FNC, evaluation report)</p>	<p><b>Risks:</b> (1) Delay in compilation of GHG inventory for period 1990-2012 and 1990-2014 by 2016 and 2018, respectively due to limited time. <b>Assumptions:</b> (1) Brazilian Government maintains its support to implement the UNFCCC</p>
	<p>(B) Publication of Third BUR.</p>	<p>(B) Previous BUR</p>	<p>(B) BUR for 2018 published and submitted, including updates of information.</p>		

## D. ANNUAL WORK PLAN

**Table 1: Total Budget and Work Plan (TBWP)**

<b>Award ID:</b>	00085388	Project ID(s):	00093060
<b>Award Title:</b>	BRA/15/G31 - Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)		
<b>Business Unit:</b>	BRA10		
<b>Project Title:</b>	BRA/15/G31 - Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)		
<b>PIMS no.</b>	5187		
<b>Implementing Partner (Executing Agency)</b>	Ministry of Science, Technology and Innovation (MCTI)		

GEF Result/ Atlas Activity	Responsible Party	Fund	Donor	ERP/ATLAS Budget		AMOUNT YEAR 1	AMOUNT YEAR 2	AMOUNT YEAR 3	AMOUNT YEAR 4	TOTAL	Notes
				Account Code	Budget Description	US\$	US\$	US\$	US\$	US\$	
OUTCOME 1: The national GHG inventory.	PNUD/MCTI	62000	GEF	71300	National Consultant	40,625	40,625	40,625	40,625	162,500	1
				71400	Contractual Services - Individ	121,875	121,875	121,875	121,875	487,500	2
				71600	Travel Expenses	81,250	81,250	81,250	81,250	325,000	3
				72100	Contractual Services- Companies	446,875	446,875	446,875	446,875	1,787,500	4
				72200	Equipment and Furniture	48,750	48,750	32,500	32,500	162,500	5
				72300	Materials & Goods	19,500	19,500	13,000	13,000	65,000	6
				74200	Communic & Audio Visual Costs	24,375	24,375	24,375	24,375	97,500	7
				74500	Miscellaneous Expenses	40,625	40,625	40,625	40,625	162,500	8
				Subtotal GEF		823,875	823,875	801,125	801,125	3,250,000	

GEF Result/ Atlas Activity	Responsible Party	Fund	Donor	ERP/ATLAS Budget		AMOUNT YEAR 1	AMOUNT YEAR 2	AMOUNT YEAR 3	AMOUNT YEAR 4	TOTAL	Notes
				Account Code	Budget Description	US\$	US\$	US\$	US\$	US\$	
OUTCOME 2. National Circumstances, Envisaged Steps for the Convention Implementation, and other relevant information	PNUD/MCTI	62000	GEF	71300	National Consultant	0	0	66,000	0	66,000	9
				71400	Contractual Services - Individ	16,500	16,500	16,500	16,500	66,000	10
				71600	Travel Expenses	16,500	16,500	16,500	16,500	66,000	11
				72100	Contractual Services- Companies	33,000	33,000	33,000	33,000	132,000	12
				72200	Equipment and Furniture	0	0	0	0	0	
				72300	Materials & Goods	0	0	0	0	0	
				74200	Communic & Audio Visual Costs	22,000	11,000	11,000	22,000	88,000	13
				74500	Miscellaneous Expenses	11,000	11,000	11,000	11,000	44,000	14
				Subtotal GEF		99,000	88,000	154,000	99,000	440,000	
OUTCOME 3.Vulnerability assessment and adaptation measures	PNUD/MCTI	62000	GEF	71300	National Consultant	58,125	58,125	58,125	58,125	232,500	15
				71400	Contractual Services - Individ	58,125	58,125	58,125	58,125	232,500	16
				71600	Travel Expenses	38,750	38,750	38,750	38,750	155,000	17
				72100	Contractual Services- Companies	193,750	193,750	193,750	193,750	775,000	18
				72200	Equipment and Furniture	23,250	23,250	15,500	15,500	77,500	19
				72300	Materials & Goods	0	0	0	0	0	
				74200	Communic & Audio Visual Costs	0	0	0	0	0	
				74500	Miscellaneous Expenses	19,375	19,375	19,375	19,375	77,500	20

GEF Result/ Atlas Activity	Responsible Party	Fund	Donor	ERP/ATLAS Budget		AMOUNT YEAR 1	AMOUNT YEAR 2	AMOUNT YEAR 3	AMOUNT YEAR 4	TOTAL	Notes
				Account Code	Budget Description	US\$	US\$	US\$	US\$	US\$	
				Subtotal GEF		391,375	391,375	383,625	383,625	1,550,000	
OUTCOME 4. Public Awareness and Education Strategy in Place	PNUD/MCTI	62000	GEF	71300	National Consultant	35,000	35,000	35,000	35,000	140,000	21
				71400	Contractual Services - Individ	17,500	17,500	17,500	17,500	70,000	22
				71600	Travel Expenses	5,250	5,250	5,250	5,250	21,000	23
				72100	Contractual Services- Companies	64,750	64,750	64,750	64,750	259,000	24
				72200	Equipment and Furniture	42,000	42,000	28,000	28,000	140,000	25
				72300	Materials & Goods	0	0	0	0	0	
				74200	Communic & Audio Visual Costs	8,750	8,750	8,750	8,750	35,000	26
				74500	Miscellaneous Expenses	8,750	8,750	8,750	8,750	35,000	27
				Subtotal GEF		182,000	182,000	168,000	168,000	700,000	
OUTCOME 5. Publication and submission of the Fourth NC	PNUD/MCTI	62000	GEF	71300	National Consultant	0	0	34,500	34,500	69,000	28
				71400	Contractual Services - Individ	0	0	0	0	0	
				71600	Travel Expenses	1,150	1,150	1,150	1,150	4,600	29
				72100	Contractual Services- Companies	0	0	0	98,900	98,900	30
				72200	Equipment and Furniture	0	0	0	0	0	
				72300	Materials & Goods	0	0	0	0	0	
				74200	Communic & Audio Visual Costs	0	0	0	46,000	46,000	31



GEF Result/ Atlas Activity	Responsible Party	Fund	Donor	ERP/ATLAS Budget		AMOUNT YEAR 1	AMOUNT YEAR 2	AMOUNT YEAR 3	AMOUNT YEAR 4	TOTAL	Notes
				Account Code	Budget Description	US\$	US\$	US\$	US\$	US\$	
				74500	Miscellaneous Expenses	2,875	2,875	2,875	2,875	11,500	32
				Subtotal GEF		4,025	4,025	38,525	183,425	230,000	
OUTCOME 6. Preparation and submission of Biennial Update Reports (BUR) in 2016 and 2018	PNUD/MCTI	62000	GEF	71300	National Consultant	25,000	0	25,000	0	50,000	33
				71400	Contractual Services - Individ	62,500	62,500	62,500	62,500	250,000	34
				71600	Travel Expenses	12,500	12,500	12,500	12,500	50,000	35
				72100	Contractual Services- Companies	0	150,000	0	150,000	300,000	36
				72200	Equipment and Furniture	0	0	0	0	0	
				72300	Materials & Goods	0	0	0	0	0	
				74200	Communic & Audio Visual Costs	75,000	75,000	75,000	75,000	300,000	37
				74500	Miscellaneous Expenses	12,500	12,500	12,500	12,500	50,000	38
				Subtotal GEF		187,500	312,500	187,500	312,500	1,000,000	
Project Management	PNUD/MCTI	62000	GEF	71200	Intl Consultants- Sht Term-Tech	0	20,076	0	30,114	50,190	39
				71400	Contractual Services - Individ	35,850	35,850	35,850	35,850	143,400	40
				71600	Travel Expenses	13,443	13,444	13,444	13,444	53,775	41
				72100	Contractual Services- Companies	5,019	5,018	5,018	5,018	20,073	42
				72200	Equipment and Furniture	10,755	10,755	7,170	7,170	35,850	43
				74500	Miscellaneous Expenses	13,803	13,803	13,803	13,803	55,212	44
				Subtotal GEF		78,870	98,946	75,285	105,399	358,500	

GEF Result/ Atlas Activity	Responsible Party	Fund	Donor	ERP/ATLAS Budget		AMOUNT YEAR 1	AMOUNT YEAR 2	AMOUNT YEAR 3	AMOUNT YEAR 4	TOTAL	Notes
				Account Code	Budget Description	US\$	US\$	US\$	US\$	US\$	
<b>Project Total per source/donor (without PPG)</b>						<b>1,766,645</b>	<b>1,90,721</b>	<b>1,808,060</b>	<b>2,053,074</b>	<b>7,528,500</b>	
Federal Government (MCTI)						293,875	293,875	293,875	293,875	1,175,500	
Embrapa						2,437,500	2,437,500	2,437,500	2,437,500	9,750,000	
INPE						1,162,500	1,162,500	1,162,500	1,162,500	4,650,000	
Rede CLIMA						1,790,000	1,790,000	1,790,000	1,790,000	7,160,000	
UNDP						37,500	37,500	37,500	37,500	150,000	
<b>TOTAL CO-FINANCING (without PPG*)</b>						<b>5,721,375</b>	<b>5,721,375</b>	<b>5,721,375</b>	<b>5,721,375</b>	<b>22,885,500</b>	
<b>GRAND TOTAL</b>						<b>7,505,120</b>	<b>7,625,196</b>	<b>7,535,535</b>	<b>7,748,149</b>	<b>30,414,000</b>	

#### Budget Notes

##### Outcome 1:

- 1 Short-term consultancy for consolidation of information on GHG inventory.
- 2 Part-time cost for experts for technical coordination of national GHG inventory and sectoral inventories.
- 3 Travel costs take into account that the project inventories cover practically all the Brazilian territory which is of continental dimensions, with huge distances and high travel costs. Plane ticket prices vary according to seasonal availability. Prices used are based on the average price of the most economical routes from state capitals to state capitals. Given that the Project's team is based in Brasilia, missions are necessary to monitor the work undertaken by main partners in each sector.
- 4 Contractual Services relate, mostly, to subcontracts of project components to specialized research institutions and other partners working on inventory estimations and improved methodology.
- 5 Technology information equipment for sectoral inventories and database (laptops, printers, servers and technical equipment for scientific experiments).
- 6 Tonners and laboratory analysis material.
- 7 Preparation of a inventory web platform for GHG data and emission results dissemination.
- 8 Funds for expenses associated with unforeseen circumstances that may arise including in relation to planning framework support, as well as to cover currency fluctuations, insurance, and banking costs needed to enable effective project implementation.

##### Outcome 2:

- 9 Short-term consultancy for consolidation of information on national circumstances.
- 10 Part-time cost for expert for technical coordination of national circumstances.
- 11 Travel expenses for technical meetings with partner institutions.
- 12 Contractual Services relate, mostly, to subcontracts of project components to specialized research institutions and other partners working on national circumstances.

- 13 Printing services.
- 14 Funds for expenses associated with unforeseen circumstances that may arise including in relation to planning framework support, as well as to cover currency fluctuations, insurance, and banking costs needed to enable effective project implementation.

**Outcome 3:**

- 15 National experts for analysis of regional and sectoral vulnerability, as well as adaptation measures.
- 16 Part-time cost for expert on national circumstances for technical coordination of vulnerability assessment and adaptation measures.
- 17 Travel expenses for technical meetings with partner institutions.
- 18 Contractual Services relate, mostly, to subcontracts of project components to specialized research institutions and other partners working on modelling and climate change scenarios, as well as on assessment of human perception of climate variability and change.
- 19 Information technology equipment for software testing.
- 20 Funds for expenses associated with unforeseen circumstances that may arise including in relation to planning framework support, as well as to cover currency fluctuations, insurance, and banking costs needed to enable effective project implementation.

**Outcome 4:**

- 21 Consultant to prepare public awareness and education strategy, as well as organize workshops and seminars for climate change information and dissemination.
- 22 Part-time costs for expert on national circumstances to undertake public awareness activities.
- 23 Travel expenses for workshops and seminars.
- 24 Logistics for workshops and seminars.
- 25 Information technology and equipment for education strategy plan (tablets and laptop).
- 26 Preparation of a web base platform for data consolidation, as well as printing services for public awareness and education strategy.
- 27 Funds for expenses associated with unforeseen circumstances that may arise including in relation to planning framework support, as well as to cover currency fluctuations, insurance, and banking costs needed to enable effective project implementation.

**Outcome 5:**

- 28 Short-term consultancy for revision of 4NC.
- 29 Mission cost for technical meetings for 4NC preparation.
- 30 Editing and translation services.
- 31 Printing services.
- 32 Funds for expenses associated with unforeseen circumstances that may arise including in relation to planning framework support, as well as to cover currency fluctuations, insurance, and banking costs needed to enable effective project implementation.

**Outcome 6:**

- 33 Specialized consultancy to assist in BUR technical review.
- 34 Part-time cost for experts for technical coordination of national GHG inventory and to gather data on climate change issues in the country on a continuous basis, elaborating draft BUR for analysis.
- 35 Mission cost for technical meetings for BUR preparation.
- 36 Editing, translation and printing services.
- 37 Preparation of a web base platform for data consolidation.

38 Funds for expenses associated with unforeseen circumstances that may arise including in relation to planning framework support, as well as to cover currency fluctuations, insurance, and banking costs needed to enable effective project implementation.

**Project Management:**

39 Independent mid-term and final evaluations to identify lessons and recommendations.

40 Project manager to provide technical and administrative expertise to project implementation, in coordination with national coordinator from MCTI.

41 Travel cost for project monitoring activities.

42 Independent auditing services to be provided.

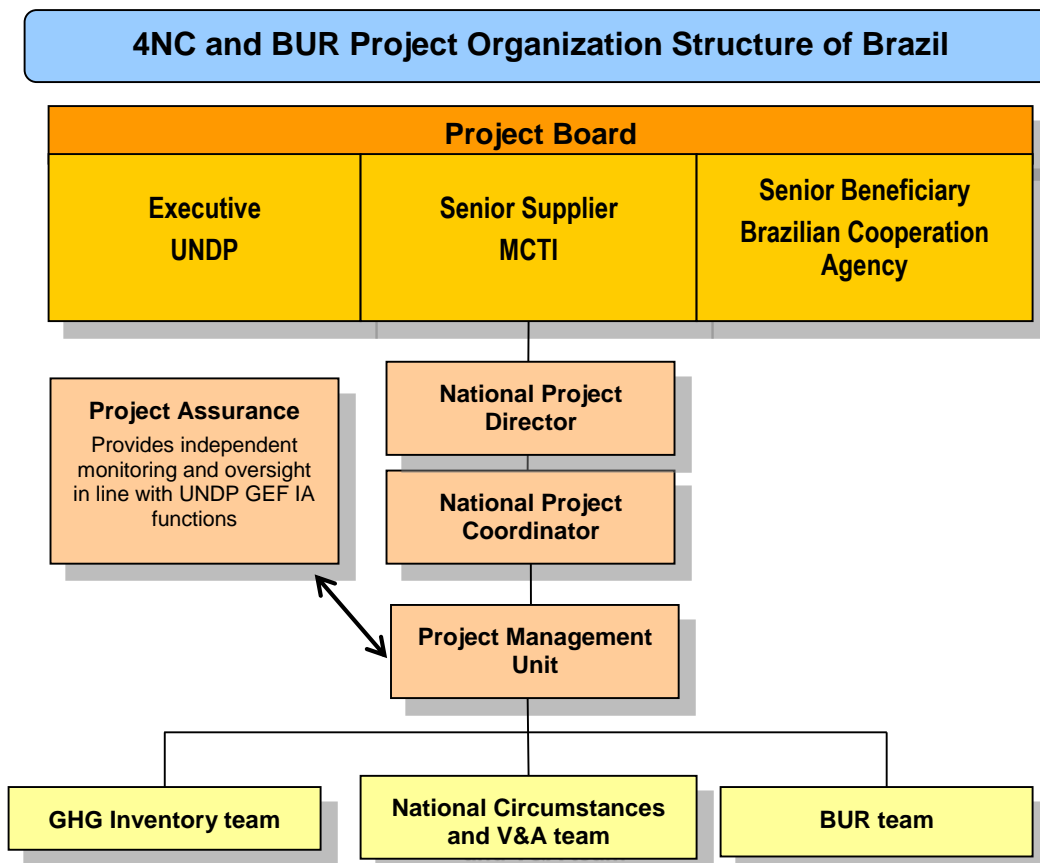
43 Information technology and equipment for project technical manager in monitoring activities (laptops, printers and software).

44 DPC to be charged by UNDP for project execution services requested by the government.

Project Components	Year 1		Year 2		Year 3		Year 4		Total	
	GEF	CoFin	GEF	CoFin	GEF	CoFin	GEF	CoFin	GEF	CoFin
OUTCOME 1: The national GHG inventory.	823,875	2,437,500	823,875	2,437,500	801,125	2,437,500	801,125	2,437,500	3,250,000	9,750,000
OUTCOME 2. National Circumstances, Envisaged Steps for the Convention Implementation, and other relevant information	99,000	255,000	88,000	255,000	154,000	255,000	99,000	255,000	440,000	1,020,000
OUTCOME 3. Vulnerability assessment and adaptation measures	391,375	1,162,500	391,375	1,162,500	383,625	1,162,500	383,625	1,162,500	1,550,000	4,650,000
OUTCOME 4. Public Awareness and Education Strategy in Place	182,000	612,500	182,000	612,500	168,000	612,500	168,000	612,500	700,000	2,450,000
OUTCOME 5. Publication and submission of the Fourth NC	4,025	172,500	4,025	172,500	38,525	172,500	183,425	172,500	230,000	690,000
OUTCOME 6. Preparation and submission of Biennial Update Reports (BUR) in 2016 and 2018	187,500	750,000	312,500	750,000	187,500	750,000	312,500	750,000	1,000,000	3,000,000
Project Management	78,871	293,875	98,946	293,875	75,285	293,875	105,399	293,875	358,500	1,175,500
<b>Total Project Costs</b>	<b>1,776,645</b>	<b>5,683,875</b>	<b>1,900,721</b>	<b>5,683,875</b>	<b>1,808,060</b>	<b>5,683,875</b>	<b>2,053,074</b>	<b>5,683,875</b>	<b>7,528,500</b>	<b>22,735,500</b>

## E. MANAGEMENT ARRANGEMENTS

87. The 4NC Enabling Activity Project will be executed under the National Execution modality (NEX) by the General Coordination on Global Climate Change at the Ministry of Science, Technology and Innovation (MCTI), which will be responsible for the technical implementation of the project as a whole. The Ministry of Science, Technology and Innovation is the technical focal point for climate change issues in Brazil and holds the responsibility for preparing the National Communications to the UNFCCC; the MCTI further holds the presidency of the Designated National Authority of the CDM and the National Designated Entities for the development and transfer of technologies in Brazil. Partnerships between key partners will be facilitated and new partnerships encouraged, especially in areas not sufficiently addressed by the TNC.



### Role of UNDP

88. UNDP is the UN's global development network, an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. In addition to being the GEF implementing agency, UNDP has an office in Brasilia that has indicated that they are willing to participate in the project as a provider of technical expertise. As it is a project financed by the Global Environmental Facility (GEF), oversight of the activities necessary for the achievement of the Project objectives will be carried out by a UNDP team directly and exclusively linked to this project, and which will work in close cooperation with MCTI.

### Project Board

89. A Project Board (PB) including the government - through the Brazilian Cooperation Agency – MCTI and UNDP will be constituted at project inception. The Project National Director will be a senior staff member of the Government executing agency and will be responsible at the highest level for ensuring that the project implementation follows national policy and standards. He/she will chair the PB and represent the project at annual tripartite meetings. He/she will also represent the project at high-level national and international meetings and will keep the Minister of the Science, Technology and Innovation updated on project advances and challenges as needed. This is a part-time position continuing for the duration of the project, reporting directly to the PB.

### Project Management Unit

90. A Project Management Unit (PMU) will be responsible for the overall coordination of the Project including operational planning, supervision, administrative and financial management and the adaptive management of the Project based on inputs from the Project M&E plan. The PMU will be responsible for overseeing the day-to-day implementation of Project activities. This includes the direct supervision of project activities sub-contracted to specialists and other institutions as well as those that are to be implemented through the MCTI. The PMU will be responsible for acting as an executive department of the PB, convening meetings of this committee, and acting as a secretary in these meetings.

91. The PMU will have responsibility for, among others: (i) managing and executing the project; (ii) coordinating the management of financial resources and procurement; (iii) reporting on the application of resources and results achieved; (iv) preparing management reports for the MCTI, PB, the GEF, and UNDP; (v) promoting inter-institutional linkages; and (vi) monitoring and evaluation, and disseminating project results. A Project National Coordinator will be assigned by the Project Director to coordinate the PMU.

92. The Project Oversight Team, to be hired with GEF resources, will be responsible for the overall management and coordination of the project technical activities. The team will manage and provide supervision of project implementation liaising directly with the Project Director, National Coordinator, the Implementing Agency and co-financiers. The team will undertake yearly operational planning and provide guidance on its day-to-day implementation. In doing this, the team shall be responsible for the effective and efficient implementation of the project activities to achieve stated objectives and for all substantive and managerial reports from the Project; prepare and/or oversee the development of Terms of Reference for consultants and contractors partnerships hired for specific technical assignments, ensure consistency between the various project elements and activities provided or funded by other donor organizations; develop reports on project progress for PB and technical meetings, and other appropriate forums.

### Roles and commitments of project counterparts

93. The 4NC Enabling Activity in Brazil is an initiative of the MCTI supported by UNDP. The Government of Brazil has committed in-kind co-financing to the Project to an amount of US\$ 22,735,500. The resources will be used according to the budget presented in this document and mainly be used for hiring consultants and services from national providers<sup>16</sup>. The Project will seek the establishment of formal partnerships with national stakeholders.

94. The project partners will keep track of committed resources using acceptable accountancy standards, as per applicable rules and regulations.

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<sup>16</sup> UNDP ATLAS budget lines 71300 and 72100.

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## **F. MONITORING FRAMEWORK AND EVALUATION**

95. Project M&E will be conducted in accordance with the established UNDP and GEF procedures and will be provided by the project team and the UNDP-CO with support from the UNDP/GEF RSC in Panama City. The Project Strategic Results Framework provides performance and impact indicators for project implementation along with their corresponding means of verification. The M&E plan includes an inception report, project implementation reviews, quarterly and annual review reports, mid-term and final evaluations, and audits. The following sections outline the principle components of the M&E plan and indicative cost estimates related to M&E activities. The M&E budget is provided in the table below. The project's M&E plan will be presented and finalized in the Project Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

### **Project inception phase**

96. A Project Inception Workshop (PIW) will be held within the first three (3) months of project start-up with the full project team, relevant GoB counterparts, co-financing partners, the UNDP-CO, and representation from the UNDP-GEF RSC, as well as UNDP-GEF headquarters as appropriate. A fundamental objective of this PIW will be to help the project team to understand and take ownership of the project's goal and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the Project Results Framework and the LD GEF Tracking Tool. This will include reviewing the results framework (indicators, means of verification, and assumptions), imparting additional detail as needed, and on the basis of this exercise, finalizing the Annual Workplan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

97. Additionally, the purpose and objective of the PIW will be to: a) introduce project staff to the UNDP-GEF team that will support the project during its implementation, namely the CO and responsible RSC staff; b) detail the roles, support services, and complementary responsibilities of UNDP-CO and RSC staff in relation to the project team; c) provide a detailed overview of UNDP-GEF reporting and M&E requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR/PIR), as well as Mid-term Review and Final evaluation. Equally, the PIW will provide an opportunity to inform the project team on UNDP project-related budgetary planning, budget reviews including arrangements for annual audit, and mandatory budget re-phrasings.

98. The PIW 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 (ToRs) for project staff and decision-making structures will be discussed, as needed, in order to clarify each party's responsibilities during the project's implementation phase. The PIW will also be used to plan and schedule the Tripartite Committee Reviews. A report on the Inception Workshop is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting (see details below).

### **Monitoring responsibilities and events**

99. A detailed schedule of project review 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: a) tentative timeframes for Tripartite Committee (TPC) Reviews, Steering Committee (or relevant advisory and/or coordination mechanisms); and b) project-related M&E activities.

100. **Day-to-day monitoring** of implementation progress will be the responsibility of the Project Technical Coordinator (PTC) based on the project's AWP and its indicators. The PTC 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 PTC will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the PIW with support from UNDP-CO and assisted by the UNDP-GEF RSC. 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 AWP. Targets and indicators for subsequent years will 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 through specific studies that are to form part of the project's activities.

101. **Changes in local Exchange Rates and anticipation of changes in exchange rates.** Possible changes in local exchange rates due to the differences in the rates will be increased or decreased in the corresponding value of U.S. dollars (USD) for each deposit, in accordance with Chapter 5, rule 5.04 of the UNDP Financing Manual. The adjustment will be made through budgetary revision, previously anticipated to the steering committee members.

102. On a quarterly basis, the UNDP, jointly with the Project Director, will perform an analysis of how much the available budget can cover and of the available project funds (as a result of eventual variations in exchange rates) in order to adjust the work plans. Any modifications needed will be made through a project revision, in accordance with SC members.

103. **Periodic monitoring** of implementation progress will be undertaken by the UNDP CO through quarterly meetings with the project implementation team, or more frequently as deemed necessary. This will allow parties to take stock of and to troubleshoot any problems pertaining to the project in a timely fashion to ensure the timely implementation of project activities. The UNDP CO and UNDP-GEF RSC, as appropriate, will conduct yearly visits to the project's field sites, or more often based on an agreed upon schedule to be detailed in the project's Inception Report and AWP's to assess first-hand project progress. Any other member of the Steering Committee can also take part in these trips, as decided by the Steering Committee. A Field Visit Report will be prepared by the UNDP CO and circulated no less than one month after the visit to the project team, all Steering Committee members, and UNDP-GEF.

104. **Annual monitoring** will occur through the Steering Committee meetings. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Steering Committee review at least once every year. The first such meeting will be held after the inception workshop. The project proponent will prepare an APR/PIR and submit it to UNDP CO and the UNDP-GEF regional office at least two weeks prior to the Steering Committee meeting for review and comments.

105. The APR/PIR will be used as one of the basic documents for discussions in the TPC. The PTC will present the APR/PIR to the Steering Committee, highlighting policy issues and recommendations for the decision of the Steering Committee participants. The PTC will also inform the participants of any agreement reached by stakeholders during the APR/PIR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary. The Steering Committee has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the PIW, based on delivery rates and qualitative assessments of achievements of outputs.



106. The Terminal Steering Committee Review is held in the last month of project operations. The PTC is responsible for preparing the Terminal Report and submitting it to UNDP-CO and to UNDP-GEF RSC. It shall be prepared in draft at least two months in advance of the Steering Committee meeting in order to allow review, and will serve as the basis for discussions in the Steering Committee meeting. The terminal Steering Committee 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 learned can be captured to feed into other projects being implemented.

### **Project Monitoring Reporting**

107. The PTC, 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 and that are mandatory.

108. A **Project Inception Report** (IR) will be prepared immediately following the PIW. It will include a detailed First Year/AWP divided in quarterly timeframes detailing the activities and progress indicators that will guide implementation during the first year of the project. This work plan will include the dates of specific field visits, support missions from the UNDP CO or the RSC or consultants, as well as timeframes for meetings of the project's decision-making structures. The IR will also include the detailed project budget for the first full year of implementation, prepared on the basis of the AWP, and including any M&E requirements to effectively measure project performance during the targeted 12-month timeframe. The IR 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 affect project implementation. When finalized, the IR 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 the IR's circulation, the UNDP CO and UNDP-GEF's RSC will review the document.

109. In light of the similarities of both APR/PIR and PIR, UNDP-GEF has prepared a harmonized format for use in fulfilling the following two requirements:

110. The **Annual Project Report** (APR/PIR) is a UNDP requirement and part of UNDP CO central oversight, monitoring, and project management. It is a self-assessment report by the project management to the CO and provides input to the country office reporting process and the Results-Oriented Annual Report (ROAR), as well as forming a key input to the PB Review. An APR/PIR will be prepared on an annual basis prior to the PB Review, to reflect progress achieved in meeting the project's AWP and assess performance of the project in contributing to intended outcomes through outputs and partnership work. The format of the APR/PIR is flexible but should include the following sections: a) project risks, issues, and adaptive management; b) project progress against pre-defined indicators and targets, c) outcome performance; and d) lessons learned/best practices.

111. The **Project Implementation Review** (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 on-going projects. Once the project has been under implementation for one year, a PIR must be completed by the CO together with the project management. The PIR can be prepared any time during the year and ideally prior to the TPC review.

The PIR should then be discussed in the Project Advisory Committee meeting so that the result would be a PIR that has been agreed upon by the project, the Implementing Partner, UNDP CO, and the RSC in Panama. The individual PIRs are collected, reviewed, and analyzed by the RSC prior to sending them to the focal area clusters at the UNDP-GEF headquarters.

112. Quarterly Progress Reports outlining main updates in project progress will be provided quarterly to the local UNDP CO and the UNDP-GEF RSC by the project team. Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform and the risk log should be regularly updated in ATLAS based on the initial risk analysis.

113. **Specific Thematic Reports** focusing on specific issues or areas of activity will be prepared by the project team when requested by UNDP, UNDP-GEF, or the Implementing Partner. 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 learned 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.

114. A **Project Terminal Report** will be prepared by the project team during the last three (3) months of the project. This comprehensive report will summarize all activities, achievements, and outputs of the project; lessons learned; 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.

115. **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 APR/PIRs. Technical Reports may also be prepared by external consultants and should be comprehensive and 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.

116. 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 or multimedia publications. These publications can be based on Technical Reports, depending upon the relevance and scientific worth 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 (in consultation with UNDP, the GoB, and other relevant stakeholder groups) will also 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.

## **Independent evaluations**

117. The project will be subjected to at least two independent external evaluations as follows:

- a) An independent **Mid-Term Review** will be undertaken at the mid-point of the project lifetime. The Mid-Term Review 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, ToRs, and exact timing of the Mid-Term Review will be decided after consultation between the parties to the project document. The ToRs for this Mid-Term Review will be prepared by the UNDP-CO based on guidance from the UNDP-GEF RSC. The management response of the evaluation will be uploaded to the UNDP corporate systems, in particular the UNDP Evaluation Resource Center (ERC). All GEF Tracking Tools for the project will also be completed during the mid-term review cycle.
- b) An independent **Final Evaluation** will take place three months prior to the terminal Steering Committee meeting, and will focus on the same issues as the Mid-Term Review. 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 and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Resource Centre (ERC). The ToRs for this evaluation will be prepared through close collaboration with the UNDP-CO, based on guidance from the UNDP-GEF RSC. All GEF Tracking Tools for the project will also be completed during the final evaluation.

#### **Audit clause**

118. According to UNDP's general corporate audit regulations, internal and external audits will be carried out individually to each responsible party, and these costs will be covered by the project. The audit will be conducted according to UNDP's financial regulations, rules, and audit policies. The GoB 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 rules and regulations.

#### **Learning and knowledge sharing**

119. 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 RSC has established an electronic platform for sharing lessons between the project managers. 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 through lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analyzing lessons learned is an ongoing 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 twelve (12) months. UNDP-GEF shall provide a format and assist the project team in categorizing, documenting, and reporting on lessons learned. Specifically, the project will ensure coordination in terms of avoiding overlap, sharing best practices, and generating knowledge products of best practices in the area of sustainable land management.

## M&E Workplan and Budget

Type of M&E Activity	Responsible Parties	Budget US\$ Excluding project team staff time	Time Frame
Inception Workshop and Report	<ul style="list-style-type: none"> <li>▪ Project Manager</li> <li>▪ UNDP CO, UNDP GEF</li> </ul>	Indicative cost: \$15,000	Within first two months of project start up
Measurement of Means of Verification of project results.	<ul style="list-style-type: none"> <li>▪ UNDP GEF RTA/Project Manager 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.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on <i>output and implementation</i>	<ul style="list-style-type: none"> <li>▪ Oversight by Project Manager</li> <li>▪ Project team</li> </ul>	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RTA</li> <li>▪ UNDP EEG</li> </ul>	None	Annually
Project Board Meetings	<ul style="list-style-type: none"> <li>▪ Project Coordinator</li> <li>▪ UNDP-CO</li> <li>▪ GoP representatives</li> </ul>	\$20,000	Two times per year
Periodic status/ progress reports	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> </ul>	None	Quarterly
Mid-term Review	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ Evaluation team</li> </ul>	Indicative cost: \$20,000	At the mid-point of project implementation.
Final Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team,</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ Evaluation team</li> </ul>	Indicative cost : \$30,000	At least three months before the end of project implementation
Lessons Learned	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ Local consultant</li> </ul>	None	Yearly
Project Terminal Report	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ Local consultant</li> </ul>	None	At least three months before the end of the project
Audit	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ Project manager and team</li> </ul>	Cost per year approx. \$5.000 (total \$ 20.000)	Yearly
Visits to field sites	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ UNDP RCU (as appropriate)</li> <li>▪ Government representatives</li> </ul>	For GEF supported projects, paid from IA fees and operational budget	Yearly
TOTAL		US\$105,000	

## G. LEGAL CONTEXT

120. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Brazil and the United Nations Development Programme, signed on December 29, 1964. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

121. 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 the

UNDP-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 outcomes, 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.

## **Cost Recovery Policy**

121. As per Determination and Decision of the UNDP's Executive Board on the *Policy on Cost Recovery from Regular and Other Resources*, UNDP shall recover costs for the provision of project related general management services (GMS) and direct project services (DPS). In GEF funded projects, GMS costs are incurred by UNDP in undertaking its Project Cycle Management Services as a GEF IA and are not included in the project budget as they are covered by GEF fees and provided to the UNDP Country Office through UNDP internal distribution. DPS costs are those incurred by UNDP for the provision of services requested by a host Government and that are execution driven and can be traced in full to the delivery of project inputs. They relate to operational and administrative support activities carried out by UNDP offices on behalf of the Direct Execution Modality (DEX) or Country Office support to National Execution Modality (NEX) and include the provision of the following estimated services:

- Payments, disbursements and other financial transactions.
- Recruitment of staff, project personnel, and consultants.
- Procurement of services and equipment, including disposal.
- Organization of training activities, conferences, and workshops, including fellowships.
- Travel authorization, visa requests, ticketing, and travel arrangements.
- Shipment, custom clearance, vehicle registration, and accreditation.

122. These execution-related costs are separate and distinct from the GMS costs. In accordance with UNDP policy on cost recovery (2010) and the BOM and UNDP GEF guidance on Direct Project Costs (2012) the costs incurred by UNDP for the provision of direct project services needs to be recovered on the basis of estimated actual costs expected to be incurred or on a per-transaction basis using the Universal price list or Local Price List costing template and should be charged directly to project budgets. The estimated costs are included in the project budget and are funded within the total project management Costs (PMC) allocation provided by GEF to the implementation Parties and cannot exceed the total PMC allocation. Once incurred after each of the above services is provided by UNDP, costs shall be charged against budget code line 74599.

**Estimated Direct Project Costs /UNDP Country Office (Management Budget Line 74500):**

Budget Description	Unit Price (a)	Amount Year 1 (USD)		Amount Year 2 (USD)		Amount Year 3 (USD)		Amount Year 4 (USD)		Total (USD)
		USD total (a*b)	No of Units (b)	USD total (a*b)	No of Units (b)	USD total (a*b)	No of Units (b)	USD total (a*b)	No of Units (b)	
Payment Processes	36	1,456	40	1,456	40	1,456	40	1,456	40	5,822
Issue checks	16	82	5	82	5	82	5	82	5	326
Create Vendor Profile	20	1,219	60	1,219	60	1,219	60	1,219	60	4,877
AR Management Processes	38	188	5	188	5	188	5	188	5	753
Procurement (average)	329	1,643	5	1,643	5	1,643	5	1,643	5	6,571
Human Resources (average)	1,536	9,216	6	9,216	6	9,216	6	9,216	6	36,862
<b>Total USD</b>		<b>13,803</b>		<b>13,803</b>		<b>13,803</b>		<b>13,803</b>		<b>55,212</b>

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## H. OTHER ARRANGEMENTS

Not applicable

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## I. ANNEXES

### ANNEX A - Detailed List of Project Activities and Potential Partners

#### **Outcome #1 National GHG Inventory is improved and updated.**

##### ***Output #1.1 Procedures for inventory development and management to enhance the current system evaluated and adjusted***

###### **Activity 1.1.1. Establishment of a database for activity data, emissions factors and emissions estimates.**

###### Contents:

- database for activity data, emission factors and emissions estimates; and
- archiving procedures.

###### Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- National Institute for Space Research (INPE);
- Brazilian Institute of Information in Science and Technology (IBICT);
- National Laboratory for Scientific Computing (LNCC); and
- Rede CLIMA

##### ***Output #1.2 Best practices in the elaboration of inventories adopted***

###### **Activity 1.2.1. Development of a Key Category Analysis.**

###### Contents:

- development of a Tier 1 and 2 Key Category Analysis.
- development of an Uncertainty Analysis.

###### Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).

###### **Activity 1.2.2. Establishment of quality control and quality assurance procedures.**

###### Contents:

- improvement of Quality Control and Quality Assurance Procedures (QA/QC);
- establishment of a QA/QC plan.

###### Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI), and
- Rede CLIMA.



### Activity 1.2.3. Uncertainty analysis.

#### Contents:

- improvement of uncertainty analysis for all inventory sectors;

#### Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI), and
- Rede CLIMA.

### ***Output #1.3 National GHG Inventory updated to 2014 (1990-2014) in the energy, industry, agriculture, land use change and forestry, and waste sectors***

#### Activity 1.3.1. Inventory for the Energy Sector.

#### Contents:

- improve information on the national energy balance (BEN);
- improve database with updated Useful Energy Balance (BEU), whose latest edition is 2005 (2004 base year);
- establishment of a common database to the energy sector and industrial processes sector;
- contribute to the establishment of a national database for the current fleet of Road Transportation Sector;
- improve and extend the bottom-up approach for GHG emissions estimation;
- improve knowledge of Brazilian specific energy transformation sectors;
- improve knowledge of Brazilian emissions factors, especially for the non-CO<sub>2</sub> gases emissions;
- improve data and emissions estimation for the transportation sector using the IPCC Tier 2 Approach; and
- improve methodology and obtain and extend data for estimating fugitive emissions.

#### Involved institutions for data provision:

- Ministry of Mines and Energy (MME);
- Federal University of Rio de Janeiro (UFRJ);
- Brazilian Association of Mineral Coal (ABCM)
- Petrobras;
- National Union of the Coal Extraction Industry (SNIEC); and
- Rede CLIMA's researchers

#### Activity 1.3.2. Inventory for the Industry Sector.

#### Contents:

- improve the assessment for the cement production sector implementing a Tier 3 methodology;
- improve activity data and assessment for lime production, limestone and dolomite use sectors, covering existing gaps in the inventory;
- improve activity data and assessment of iron and steel industry and aluminium sectors implementing Tier 3 methodologies;
- improve activity data and assessment of chemical industry sector; and
- improve activity data and assessment of the production and consumption of HFCs, PFCs and SF<sub>6</sub> sector.

#### Involved institutions for data provision:

- National Cement Industries Association (SNIC);
- Brazilian Association of Lime Producers (ABPC);
- Brazilian Chemical Industry Association (ABIQUIM);
- Brazilian Aluminium Association (ABAL);
- Brazilian Steel Institute (IABr);
- Brazilian Pulp and Paper Association (BRACELPA);
- Brazilian Beverages Association (ABRABE), Brazilian Food Industry Association (ABIA) and Brazilian Wine and Grape Growers Union (UBIBRA); and
- Rede CLIMA.

#### Activity 1.3.3. Inventory for the Agriculture Sector.

##### Contents:

- improving the quality of activity data;
- develop methodologies with higher Tier for some categories, for example, for enteric fermentation, direct emissions from soil and methane emissions from rice; and
- develop country-specific emission factors proceeding with the studies initiated in the TNC.

##### Involved institutions:

- Brazilian Agricultural Research Corporation (EMBRAPA Meio Ambiente)<sup>17</sup> 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
- Rede CLIMA.

#### Activity 1.3.4. Inventory for the LULUCF.

##### Contents:

- define primary land use categories and selected subcategories using high-resolution satellite data, at least, in 2010 and 2014, for the entire national territory;
- map the changes in land use from 2010 and 2014 using geo-referenced technology;
- identify individual cells by: (a) soil map, (b) native vegetation, (c) land use in year 2010 and 2014, (d) municipality; (e) biomass content; (f) climate;
- estimate changes in carbon stock for each cell (all biomes and land use categories/subcategories) identified in above activity for each of the five carbon pools, using in addition: a) carbon stock map for the main forest physiognomies in Amazonia, b) main literature concerning biomass stocks for the other biomes; c) reference soil carbon stock map;
- update inventory 1990-2010;
- estimate non-CO<sub>2</sub> emissions from fire, fertilizer application in forests, and liming; and
- extend studies on methane emissions from water reservoirs;

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<sup>17</sup> EMBRAPA will soon evaluate a new project named "Continuous Improvement Program of the National Inventory of greenhouse gases emissions in Agriculture and Annual Emission Estimates" that could improve the next National Inventories with new data and results. One of the objectives of this project is to align the actions of monitoring emission reductions from the Low Carbon Agriculture Plan with the international report of these actions.

- improvement in the estimates of the quantity of timber and charcoal production (especially for CH<sub>4</sub> emissions);
- enhance estimates of forest degradation;
- Enhance the understanding to the dynamics of land use, not only deforestation; and
- Review the data base for vegetation physiognomy;

Involved institutions:

- National Space Research Institute (INPE)<sup>18</sup>;
- Rede CLIMA; and
- Foundation for Science, Technology and Space Applications (FUNCATE).

#### Activity 1.3.5. Inventory for the Waste Sector.

Contents:

- improve data and extend estimates for solid waste disposal sector with regional evaluation of waste generation rates, waste composition and disposal practices;
- improve data and extend estimates for industrial waste water handling sector by type of industry; and
- improve the estimate of GHG emissions from waste incineration sector.

Involved institutions:

- Environment Sanitation Agency of the State of São Paulo (CETESB);
- Brazilian Institute for Geography and Statistics;
- Rede CLIMA; and
- Regional projects conducted together with local institutions.

### **Outcome #2 National Circumstances and Envisaged Steps for the Convention Implementation (Period 2014 to 2017).**

#### ***Output #2.1. Report on national and regional development priorities and institutional arrangements.***

##### Activity 2.1.1. Report about the National and Regional Development Priorities.

Contents:

- elaborate a report on National and Regional Development Priorities, including characterization of territory, economy, Brazilian climate, social development, summary of national circumstances.

Involved institutions:

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<sup>18</sup> INPE is developing an integrated system (INPE-EM) of calculation for the LULUCF sector emissions. From the TNC, the results of the estimates of 1st and 2nd order INPE-EM will be presented in "National Circumstances" section, as a potential evolution of the calculation method for the LULUCF inventory. The use of INPE-EM allow Brazil to report on Tier 3 of the GPG / LULUCF, but this evolution will be gradual. The current version of INPE-EM covers only some of the transitions reported in national communications to hang in conversions of secondary forest vegetation, deforestation, responsible for most emissions from LULUCF in Brazil. The 2nd order model (that separates instant by fire and biological decay over time issue, as well as the dynamics of secondary vegetation) is parameterized only to the Amazon. Are ongoing research to parameterize the Cerrado and Caatinga. The synergy between the INPE-EM and the official calculations of TNC was established by the Rede CLIMA, and will continue in 4CN and BUR. This synergy ensures compatibility when using the same data and refinement parameters (all compartments of biomass, land use parameters and emission / absorption). With evolution, it is expected that the INPE-EM will in the future replace spreadsheets with estimates of 1st order and if considered appropriate, 2nd order.

- Ministry of Science, Technology and Innovation (MCTI);
- Brazilian Institute for Geography and Statistics (IBGE);
- Rede Clima.

**Activity 2.1.2. Report about Existing Institutional Arrangements Relevant to the Preparation of the Inventory on a Continuing Basis.**

Contents:

- elaborate a report on 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 institutional framework and capacity building

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI); and
- Rede CLIMA

**Activity 2.1.3. Report on national programs containing measures to facilitate adequate climate change adaptation.**

Contents:

- programs implemented or being prepared in Brazil containing measures to facilitate adequate adaptation to climate change regarding semi-arid region, floods, frost, health sector, electrical sector, agriculture, and disaster preparedness.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI); and
- Rede CLIMA.

***Output #2.2. Report on needs, constraints and gaps and other relevant information.***

**Activity 2.2.1. Report on Special Circumstances, including the Special Needs and Concerns Arising from the Adverse Effects of Climate Change and/or of the Implementation of Response Measures.**

Contents:

- 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 regarding maritime islands, general implications of a rise in sea level for coastal zones, desertification, areas with high urban atmospheric pollution, regions with fragile ecosystems and external dependency of oil and oil products.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- Brazilian Institute for Geography and Statistics (IBGE); and
- Rede Clima.

Activity 2.2.2. Study on constraints and gaps, and related financial, technical and capacity needs in Brazil.

Contents:

- describe constraints and gaps; and
- describe related financial, technical and capacity needs in Brazil.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI); and
- Rede CLIMA.

***Output #2.3. Report on measures for climate change mitigation.***

Activity 2.3.1. Description of Steps Taken or Envisaged to Implement the UNFCCC in Brazil.

Contents:

- programs containing measures to mitigate climate change implemented or been elaborated in Brazil.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI); and
- Rede CLIMA.

Activity 2.3.2. Other information relevant to the implementation of the Convention in Brazil.

Contents:

- transfer of technologies;
- research and systematic observation;
- education, training and public awareness;
- capacity building activities;
- information; and
- networking related to climate change.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI); and
- Rede CLIMA.

**Outcome #3 Vulnerability Assessment and Adaptation Measures.**

***Output #3.1. Documented climate scenarios based on the Brazilian Earth System Model (BESM) and downscaling with the Regional Earth System Model (RESM - former Eta-model).***

Activity 3.1.1. Global Climate Change.

Contents:

- Projections for at least 3 emission scenarios such scenarios shall encompass the time periods of 1800 and 2100;
- Evaluation of continental and regional scale changes on the precipitation, temperature, and severe weather frequency, both for the current climate (1960-2010);

- Evaluation of continental and regional scale changes on the precipitation, temperature, and severe weather frequency, both for the future climate scenarios (2015-2100).

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- National Space Research Institute (INPE); and
- Rede CLIMA.

### Activity 3.1.2. Regional Earth System Model – RESM.

Contents:

- Generate regional climate change scenarios;
- Operate an enhanced version of the RESM, with perturbed physics members, forced with at least 4 global climate models, including the BESM;
- Assessment on climate change impacts on cities with more detailed projections; and
- Vulnerability assessment for different sectors.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- National Space Research Institute (INPE); and
- Rede CLIMA.

***Output #3.2. Impact assessment of the atmospheric chemistry component of BESM; impact assessment of surface vegetation fires simulated by the fire module of BESM; impact assessment of projected large scale climatic fluctuations of rainfall on river runoff variations and its impacts on ocean carbon cycles and coastal erosion.***

### Activity 3.2.1. Impact assessment of the atmospheric chemistry component, fire module and large scale climatic fluctuations of rainfall.

Contents:

- Analysis of impacts regarding agriculture, water resources, energy, economy, health and ecosystems.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- National Space Research Institute (INPE); and
- Rede CLIMA.

***Output #3.3. Regional and sectoral vulnerability analysis (using vulnerability indexes) and generation of maps, under various emission scenarios and time slices, in GIS format.***

### Activity 3.3.1. Analysis of the regional and sectoral vulnerability.

Contents:

- Analysis of regional and sectoral vulnerability;
- Use of the vulnerability indexes;

- Generation of maps for different emission scenarios and time slices.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- National Space Research Institute (INPE); and
- Rede CLIMA.

***Output #3.4. Network of low cost data collection devices for the assessment of the human perception of climate variability (extreme events) and change, to be used as a metric for adaptation policies.***

Activity 3.4.1. Prepare the data collection software, select sectors to host data collection test among those assessed by the vulnerability analysis and analyse data of test events.

Contents:

- Prepare data collection software to be tested in one of the sectors;
- Present software to Rede CLIMA researchers and select sectors to host data collection;
- Test events of the software in field researches.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- National Space Research Institute (INPE); and
- Rede CLIMA.

***Output #3.5. Adaptation measures for the key sectors identified.***

Activity 3.5.1. Assessment of adaptation measures for key sectors.

Contents:

- Identify the keys sectors;
- Evaluate the adaptation measures for the key sectors.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- National Space Research Institute (INPE); and
- Rede CLIMA.

**Outcome #4 Public Awareness And Education Strategy.**

***Output #4.1. Relevant documents and policy briefs published and disseminated.***

Activity 4.1.1 Publication of 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.

Contents:

- translate relevant documents and reports;
- elaborate reports and information related to climate change related issues; and
- publish relevant documents and reports.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).

***Output #4.2. Web site of the Ministry of Science, Technology and Innovation updated with information on GHG Inventories, legislation, scientific knowledge and other climate change issues.***

Activity 4.2.1 Web site of the Ministry of Science, Technology and Innovation with updated information concerning climate change issues, as well as the national GHG inventory results

Contents:

- update information on the MCTI web site

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).

***Output #4.3. Workshops and seminars organized and participation in public events in order to disseminate information on climate change issues, presenting main findings of the project.***

4.3.1 Organizations of workshops and seminars and participation in public events in order to disseminate information on climate change issues, presenting the project and the results achieved.

Contents:

- organize workshop(s) to present data of the inventory on different sectors (energy, industry, agriculture, LULUCF and waste) and sub-sectors.
- organize workshop for presenting the 4NC.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).

## **Outcome #5 Publication and Submission of the Fourth National Communication**

***Output #5.1. Publication of the 4NC hard copy and alternative media in Portuguese and English.***

Activity 5.1.1. National Inventory;

Contents:

- edit, translate and publish the background reports for different sectors (energy, industry, agriculture, LULUCF and waste) and sub-sectors;
- edit, translate and publish the consolidated National Inventory.

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).



#### Activity 5.1.2. Study on National Circumstances;

##### Contents:

- edit, translate and publish the report on National Circumstances.

##### Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).

#### Activity 5.1.3. Report on the Description of Steps Taken or Envisaged to Implement the Convention in Brazil.

##### Contents:

- edit, translate and publish, including background and preliminary reports

##### Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).

### ***Output #5.2. Reference Reports of the National Inventory published for the different sectors.***

#### Activity 5.2.1. Publication of the Reference Reports;

##### Contents:

- edit and publish the reference reports for each sector (energy, industry, agriculture, LULUCF and waste) and sub-sector;
- edit and publish the consolidated National Inventory for each sector.

##### Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI).

### **Outcome #6 Publication and Submission of Biennial Update Reports**

#### ***Output #6.1. BURs for 2016 and 2018 published and submitted, including update of information regarding National Circumstances, National GHG Inventory, Mitigation actions, constraints and gaps, support received and domestic MRV.***

##### Activity 6.1.1 Elaboration and publication of the second BUR in 2016:

##### Contents:

- elaborate, edit, translate and publish the information on national circumstances and institutional arrangements;
- elaborate, edit, translate and publish the national inventory;
- elaborate, edit, translate and publish the information on mitigation actions and their effects;
- elaborate, edit, translate and publish the information about constraints and gaps, and related financial, technical and capacity needs, including a description of support needed and received;
- elaborate, edit, translate and publish the information on the level of support received to enable the preparation and submission of biennial update reports;

- elaborate, edit, translate and publish the information on domestic measurement reporting and verification;
- elaborate, edit, translate and publish any other information that Brazil considers relevant

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- Rede CLIMA;
- Ministries that have sectoral mitigation plans;
- .
- Ministry of External Relations.

#### Activity 6.1.2 Elaboration and publication of the third BUR in 2018:

Contents:

- elaborate, edit, translate and publish the information on national circumstances and institutional arrangements;
- elaborate, edit, translate and publish the national inventory;
- elaborate, edit, translate and publish the information on mitigation actions and their effects;
- elaborate, edit, translate and publish the information about constraints and gaps, and related financial, technical and capacity needs, including a description of support needed and received;
- elaborate, edit, translate and publish the information on the level of support received to enable the preparation and submission of biennial update reports;
- elaborate, edit, translate and publish the information on domestic measurement reporting and verification;
- elaborate, edit, translate and publish any other information that Brazil considers relevant

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- Rede CLIMA;
- Ministries that have sectoral mitigation plans;
- Ministry of External Relations.

### **Outcome #7 Project Management**

#### ***Output #7.1. Monitoring and evaluation program***

##### **Activity 7.1.1. Implementation of monitoring and evaluation program**

Contents: (see M&E Workplan for more details)

- Inception workshop;
- Monitoring reports including QPR and PIR;
- Final project evaluation (FEV).

Involved institutions:

- Ministry of Science, Technology and Innovation (MCTI);
- United Nations Development Programme (UNDP)

## ANNEX B Risk Analysis

### Summary of Risk Log and counter measures.

#	Description	Date identified	Type	Impact and probability (on a scale of 1 (low) to 5 (high))	Counter measures/ Mitigation response	Owner	Submitted / Updated by	Last update	Status
1	- Coordination with stakeholders may cause delay since a large number of actors from different economic sectors of the society are involved.		Organizational	P = 5 I = 1	This risk will be minimized by building on the inter-sector agreements and institutional collaboration established during the implementation of the Fourth National Communication (4NC). Commitment from all stakeholders will be also maintained through effective coordination and communication between stakeholders and Government.	National Project Director	UNDP CO	Submission date	No change
2	- Difficulty in hiring qualified people.		Organizational	P = 2 I = 4	The project can draw on a pool of national experts. Proper preparation of ToR and contracts should help minimizing delay due to this cause.	National Project Director	UNDP CO	Submission date	No change
3	- Limited political support to Climate Change issues.		Organizational , Strategic	P = 1 I = 4	This risk is deemed very low since Brazil has anchored its climate policy in national Law; and the NCs are elements in a continuous process.	National Project Director	UNDP CO	Submission date	No change

## ANNEX C Stakeholder institutions for 4NC and BUR

Besides the institutions on the Rede CLIMA network, other institutions may be involved in the preparation of the Fourth National Communication and Biennial Update Reports, as listed below:

Institution	Contributes to / Prepares	Output related	Comparative advantage
<b>Brazilian Research Network on Global Climate Change (Rede CLIMA)</b>	<ul style="list-style-type: none"> <li>Conducting research on various aspects of climate change.</li> </ul>	Outputs 1.2, 1.3, 2.1 and 2.2	Large expertise of researchers and prior contribution to the development of TCN.
<b>Brazilian Chemical Industry Association (ABQUIM)</b>	<ul style="list-style-type: none"> <li>Industry reference reports on chemical industry emissions.</li> <li>Industry reference reports on industrial processes emissions.</li> <li>Industry reference reports on industrial processes: mineral products – production of lime, limestone and dolomite.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>National Cement Industry Union (SNIC)</b>	<ul style="list-style-type: none"> <li>GHG emissions of industrial processes: mineral products – production of cement.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Brazilian Association of Portland Cement (ABCP)</b>	<ul style="list-style-type: none"> <li>Industry reference reports on industrial processes: mineral products – production of cement.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Brazilian Aluminum Association (ABAL)</b>	<ul style="list-style-type: none"> <li>Industry reference reports on industrial processes: metal products - aluminum.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Brazil Steel Institute (IABr)</b>	<ul style="list-style-type: none"> <li>Industry reference reports on industrial processes: metal products – iron and steel.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Brazilian Lime Producers Association (ABPC)</b>	<ul style="list-style-type: none"> <li>GHG emissions of industrial processes: mineral products – production of lime, limestone and dolomite.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Ministry of External Relations</b>	<ul style="list-style-type: none"> <li>It formulates foreign policy and conducts international negotiations on climate change.</li> </ul>	Output 6.1	Experience in conducting international negotiations on climate change.
<b>Ministry of Mines and Energy (MME)</b>	<ul style="list-style-type: none"> <li>GHG emissions of industrial processes: mineral products – production of lime, limestone and dolomite.</li> <li>GHG emissions of vehicles</li> </ul>	Output 1.3	It will develop knowledge about some data related to GHG emission.

<b>Institution</b>	<b>Contributes to / Prepares</b>	<b>Output related</b>	<b>Comparative advantage</b>
	<ul style="list-style-type: none"> <li>• Carbon dioxide emissions from fossil fuel combustion: top-down method.</li> <li>• GHG emissions from fossil fuel combustion: bottom-up method.</li> </ul>		
<b>Ministry of the Environment</b>	<ul style="list-style-type: none"> <li>• It coordinates, at the executive level, the work undertaken by the Interministerial Committee on Climate Change.</li> </ul>	Output 6.1	It has the responsibility of monitoring the national mitigation actions.
<b>Ministry of Planning, Budget and Management</b>	<ul style="list-style-type: none"> <li>• It is responsible for planning and budgetary issues.</li> </ul>	Output 6.1	It has information about financial support received.
<b>Secretariat of Strategic Affairs (SAE)</b>	<ul style="list-style-type: none"> <li>• It has an important role in long term planning</li> </ul>		
<b>Ministry of Finance</b>	<ul style="list-style-type: none"> <li>• It is responsible for coordinating discussions on carbon markets.</li> </ul>	Output 6.1	It has information about financial support received.
<b>Ministry of Development, Industry and External Commerce (MDIC)</b>	<ul style="list-style-type: none"> <li>• It is responsible for the mitigation plan for the industrial sector.</li> </ul>	Output 6.1	It has information about mitigation actions.
<b>Ministry of Transport</b>	<ul style="list-style-type: none"> <li>• It is responsible for the mitigation plan for the transport sector.</li> </ul>	Output 6.1	It has information about mitigation actions.
<b>Ministry of Cities</b>	<ul style="list-style-type: none"> <li>• In collaboration with the Ministry of Transport, it is responsible for the mitigation plan for the transport sector, regarding urban mobility issues.</li> </ul>	Output 6.1	It has information about mitigation actions.
<b>Brazilian Forum on Climate Change</b>	<ul style="list-style-type: none"> <li>• It has the purpose of raising the awareness of society and mobilizing it for discussion and decision-making on problems resulting from climate change, thus promoting stakeholder dialogue. It promotes the institutional interface between Government and Civil Society.</li> </ul>	Output 4.3	Important partner to promote the institutional interface between Government and Civil Society.
<b>São Paulo State Environmental Company (CETESB)</b>	<ul style="list-style-type: none"> <li>• Reference reports on solid waste disposal emissions treatment.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Foundation for Space Science, Technology and Applications (FUNCATE)</b>	<ul style="list-style-type: none"> <li>• Reference reports on carbon dioxide emissions from land use, land-use change and forestry.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.

<b>Institution</b>	<b>Contributes to / Prepares</b>	<b>Output related</b>	<b>Comparative advantage</b>
<b>Petrobras</b>	<ul style="list-style-type: none"> <li>Reference reports on fugitive GHG emissions in oil and natural gas industry.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Brazilian Coal Association (ABCM)</b>	<ul style="list-style-type: none"> <li>Industry reference reports on industrial processes: metal products – iron and steel.</li> <li>Energy reference reports: fugitive GHG emissions from coal mining and handling.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Brazilian Agricultural Research Corporation (Embrapa)</b>	<ul style="list-style-type: none"> <li>Agriculture reference reports.</li> </ul>	Output 1.3	Embrapa has the expertise in agriculture research. Contribution to the development of the previous National Inventories.
<b>Federal University of Rio de Janeiro (COPPE/UFRJ)</b>	<ul style="list-style-type: none"> <li>Energy reference reports: top-down and bottom-up.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Association of the Santa Catarina Coal Industry (SATC)</b>	<ul style="list-style-type: none"> <li>Energy reference reports: fugitive GHG emissions from coal mining and handling.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Pontifical Catholic University of Rio Grande do Sul (PUCRS)</b>	<ul style="list-style-type: none"> <li>Energy reference reports: fugitive GHG emissions from coal mining and handling.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>National Civil Aviation Agency (ANAC)</b>	<ul style="list-style-type: none"> <li>Energy reference reports: GHG emissions from civil aviation.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Department of Airworthiness (SAR)</b>	<ul style="list-style-type: none"> <li>Energy reference reports: GHG emissions from civil aviation.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.
<b>Center for Environmental Protection Studies (NEPA)</b>	<ul style="list-style-type: none"> <li>Energy reference reports: GHG emissions from civil aviation.</li> </ul>	Output 1.3	Contribution to the development of the previous National Inventories.

## **ANNEX D    Agreements**

Not applicable

## **ANNEX E    Terms of Reference**

**The National Project Coordinator** will be responsible for the management, planning and coordination of the project activities. He/she will provide supervision of project implementation and be the key contact person for the project. He/she will be responsible for preparing communication with UNDP CO and the host institute, Project Steering Committee and co-funders. In coordination with UNDP CO, he/she will undertake yearly operational planning, provide guidance on day-to-day implementation and be responsible for the effective and efficient implementation of the project activities in compliance with the overall Project objectives. Further key responsibilities include supervising the team allocated to the project from the relevant Government institutions; prepare Terms of Reference for consultants and contractors hired for specific technical assignments, ensure consistency between the various project elements and activities provided or funded by other donor organizations; develop reports on project progress on the project for Steering Committee and technical meetings. He/she shall report to the Project Director and to UNDP CO. This is a full-time position for the duration of the project.

The **Project Manager**, to be hired with GEF resources, will be responsible for the overall management and coordination of the project technical activities. He/she will manage and provide supervision of project implementation liaising directly with the Project Director, National Coordinator, the Implementing Agency and co-financiers. He/she will undertake yearly operational planning and provide guidance on its day-to-day implementation; and, shall be responsible for develop reports on project progress on the project for PSC and technical meetings, and other appropriate forums.

The **Project Oversight Team**, to be hired with GEF resources, shall be responsible for the effective and efficient implementation of the project activities to achieve stated objectives and for all substantive and managerial reports from the Project; and, prepare and/or oversee the development of Terms of Reference for consultants and contractors partnerships hired for specific technical assignments, ensure consistency between the various project elements and activities provided or funded by other donor organizations.

Detailed terms of reference for these positions will be drafted by UNDP CO and MCTI during the inception phase of the Project with support from the UNDP/GEF RTA.



## SIGNATURE PAGE

Country: BRAZIL

**Project Title:** Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC).

**UNDAF Outcome(s):** Incorporating sustainable development, green economy and decent labour paradigms into national public policies.

**UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:** Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded. **Output 1.4.** Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented.

**UNDP Strategic Plan Secondary Outcome:** Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded. **Output 1.3.** Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste.

**Expected CP Outcome(s):** Capacities for integrating sustainable development and productive inclusion for poverty reduction.

**Expected CPAP Output (s):** Low-carbon strategies with LECRDS concept adopted in Brazil and widely disseminated

**Executing Entity/Implementing Partner:** Ministry of Science, Technology and Innovation (MCTI)

**Implementing Entity/Responsible Partners:** Ministry of Science, Technology and Innovation (MCTI)

Programme Period: 2015-2018
Atlas Award ID: 00085388
Project ID: 00093060
PIMS ID: 5187
Start date: 01 January 2015
End Date: 31 December 2018
Management Arrangements: National Implementation
PAC Meeting Date _____

**Agreed by (Government):**

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NAME	SIGNATURE	Date/Month/Year
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**Agreed by (Executing Entity/Implementing Partner):**

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NAME	SIGNATURE	Date/Month/Year
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**Agreed by (UNDP):**

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NAME	SIGNATURE	Date/Month/Year
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