Global Environment Facility (GEF)

United Nations Development Programme (UNDP)

Ministry of Science, Technology and Innovation (MCTI)

Terminal Evaluation of the project on:

"Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)"

Terminal Evaluation Report

GEF Project ID: 5378

UNDP Project ID: 5187

Project ID: 00093060

Focal Area: Climate change

Evaluation timeframe: 8 September – 13 December 2021

13 December 2021

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Evaluation team

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Acronyms and abbreviations

4NC	Fourth National Communication
5NC	Fifth National Communication
APR	Annual Project Report
AWP	Annual Work Plan
BESM	Brazilian Earth System Model
BUR	Biennial Update Report
CETESB	São Paulo State Environmental Company (*Companhia Ambiental do Estado de São Paulo*)
CGCL	General Coordination of Climate Science and Sustainability (*Coordenação-Geral de Ciência do Clima e Sustentabilidade*)
CIM	Interministerial Committee on Climate Change (*Comitê Interministerial sobre Mudança do Clima*)
CPD	Country Programme Document
EMBRAPA	Brazilian Agricultural Research Corporation (*Empresa Brasileira de Pesquisa Agropecuária*)
GEF	Global Environment Facility
GHG	Greenhouse gas
INPE	National Institute for Space Research (*Instituto Nacional de Pesquisas Espaciais*)
IP	Implementing partner
IPPU	Industrial processes and product use
LULUCF	Land use, land-use change and forestry
M&E	Monitoring and Evaluation
MCTI	Ministry of Science, Technology and Innovation
MME	Ministry of Mines and Energy
MTR	Mid-term review
NAP	National adaptation plan
NDC	Nationally determined contribution
PIR	Project Implementation Review
PNMC	National Policy on Climate Change (*Política Nacional sobre Mudança do Clima*)
PPG	Project preparation grant
PRF	Project results framework
ProDoc	Project document
PSC	Project Steering Committee
Rede CLIMA	Brazilian Research Network on Global Climate Change (*Rede Brasileira de Pesquisas sobre Mudanças Climáticas Globais*)
SIRENE	National Emissions Registration System (*Sistema de Registro Nacional de Emissões*)
TE	Terminal Evaluation
ToRs	Terms of Reference
UFC	Federal University of Ceará (*Universidade Federal do Ceará*)
UNB	University of Brasilia (*Universidade de Brasília*)
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEG	United Nations Evaluation Group
USP	University of São Paulo (*Universidade de São Paulo*)

1. Executive Summary

Table 1. Project information table

Project details		**Project milestones**	
Project Title	Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)	PIF Approval Date:	2 May 2013
UNDP Project ID (PIMS #):	5187	CEO Endorsement Date:	11 May 2016
GEF Project ID:	5378	ProDoc Signature Date:	11 August 2016
UNDP Atlas Business Unit, Award ID, Project ID:	Award ID: 000 85388 Project ID: 000 93060	Date Project Manager hired:	12 September 2016
Country/Countries:	Brazil	Inception Workshop Date:	N.A.
Region:	Latin America	Mid-Term Review Completion Date:	14 June 2019
Focal Area:	Climate change mitigation	Terminal Evaluation Completion Date:	13 December 2021
GEF Operational Programme or Strategic Priorities/Objectives:	CCM-6. Outcome 6.1.	Planned Operational Closure Date:	Original: 10 August 2020 Revised: 11 December 2021
Trust Fund:	GEF Trust Fund (GEF TF)		
Implementing Partner (GEF Executing Entity):	Ministry of Science, Technology and Innovation (MCTI)		
NGOs/CBOs involvement:	Consultations		
Private sector involvement:	Consultations		
Geospatial coordinates of project sites:	15.75°S, 47.84°W (Brasilia)		
Financial information			
PDF/PPG:	at approval (US$M)	at PDF/PPG completion (US$M)	
GEF PDF/PPG grants for project preparation:	0.00	0.00	
Co-financing for project preparation:	0.00	0.00	
Project	at CEO Endorsement (US$M)	at TE (US$M)	
[1] UNDP contribution:	150,000	150,000	
[2] Government:	22,735,500	Not reported	
[3] Other multi-/bi-laterals:	0.00	0.00	
[4] Private Sector:	0.00	0.00	
[5] NGOs:	0.00	0.00	
[6] Total co-financing:	22,885,500	Not reported	
[7] Total GEF funding:	7,528,500	5,110,100	
[8] Total Project Funding [6 + 7]	30,414,000	Not reported	

1.1. Project description

The objective of the project on "Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)" was 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". The ultimate goal of the project was 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".[1]

The project's activities were organized under six outcomes on: (1) updating and improving the national inventory of greenhouse gases (GHG), (2) reporting on the national circumstances, needs and actions to implement the UNFCCC, (3) assessing the vulnerability to climate change and identifying adaptation measures, (4) raising awareness on climate change, (5) publishing Brazil's Fourth National Communication to the UNFCCC (4NC), and (6) publishing Brazil's second and third Biennial Update Reports (BURs). A list of the project outcomes, outputs and activities is provided in Annex J of this evaluation report.

The project received a grant from the Global Environment Facility (GEF) for USD 7,528,500 and committed to mobilize USD 22,885,500 in cofinancing resources, including:

- Ministry of Science, Technology and Innovations (MCTI): USD 1,175,500
- Brazilian Agricultural Research Corporation (EMBRAPA): USD 9,750,000
- National Institute for Space Research (INPE): USD 4,650,000
- Brazilian Research Network on Global Climate Change (Rede CLIMA): USD 7,160,000
- UNDP: USD 150,000[2]

Annex L provides a detailed overview of the project financing, including budget allocation and expenditures across project components.

The project started on 11th August 2016 with the signature of the Project Document (ProDoc) and was operationally closed on 11th December 2021.

1.2. Evaluation ratings table

The summary of the evaluation ratings is provided in Table 2, below. A complete discussion of the ratings is provided in section 4.

[1] Project document (ProDoc), p. 16.
[2] CEO Endorsement Request, p. 4

Table 2. Evaluation ratings table

1. Monitoring & Evaluation (M&E)	Rating
M&E design at entry	S
M&E Plan Implementation	S
Overall Quality of M&E	S
2. Implementing Agency (IA) Implementation & Executing Agency (EA) Execution	**Rating**
Quality of UNDP Implementation/Oversight	S
Quality of Implementing Partner Execution	HS
Overall quality of Implementation/Execution	S
3. Assessment of Outcomes	**Rating**
Relevance	S
Effectiveness	S
Efficiency	S
Overall Project Outcome Rating	S
4. Sustainability	**Rating**
Financial sustainability	L
Socio-political sustainability	ML
Institutional framework and governance sustainability	ML
Environmental sustainability	Not assessed
Overall Likelihood of Sustainability	L

1.3. Summary of findings and conclusions

The immediate objective of the project was to support the preparation and submission to UNFCCC of Brazil´s 4NC and two BURs. This immediate objective was achieved as the 4NC was successfully submitted on 31 December 2020, BUR 2 on 3 March 2017, and BUR 3 on 22 July 2020. Moreover, the objective was exceeded given that the project could support the preparation and submission to UNFCCC of a third BUR (BUR 4), on 31 December 2020. All the main elements of 4NC were prepared and reviewed by experts, validated by the Government of Brazil, and made available for public consultation.

The project was also designed to improve the approaches, methodologies, data sources and quality of the GHG inventory and vulnerability assessments. Based on the review of project deliverables and interviews with stakeholders, this evaluation concludes that the project met the expectations. The update to the GHG inventory reported in 4NC fully follows, for the first time, the "2006 IPCC Guidelines for National Greenhouse Inventories". This is an improvement to earlier inventories which only partially used these guidelines.

The assessment of climate vulnerability followed an innovative approach based on an integrated analysis of the availability, sustainability, and fair distribution of key resources (i.e. energy, water, food, and ecosystem services[3]) that takes into consideration climate risks, political and institutional factors, and territorial/regional specificities. This approach, based on the analysis of the security of each resource and their interdependencies, is a departure from more conventional sectoral approaches to the assessment of climate vulnerability.

The work on the elaboration of 4NC and BURs relied on long-standing partnerships with organizations affiliated to Rede CLIMA and other organizations. The management of these partnerships was a critical

[3] Referred also as "socioenvironmental security" in the NC and technical reports produced by the project.

factor to the project´s success, and the role that the project team had maintaining these partnerships was deemed effective, timely, and helpful by stakeholders interviewed for this evaluation. Still, the administrative procedures to formalize the collaboration with organizations affiliated to Rede CLIMA were burdensome and time-consuming, generating delays, especially during the first months of project implementation.

This evaluation concluded that the project was implemented efficiently, adhering to Annual Work Plans (AWPs), achieving satisfactory disbursement rates, and without suffering major time delays. Interviews with project stakeholders coincided in affirming that the project team was exceptionally skilled and effective at implementing the project activities and resolving emerging issues.

Changes in the political landscape in Brazil presented the project with additional challenges that added complexity to the execution and coordination of project activities. MCTI, with support from the project team and partners, was able to navigate this added complexity, keeping the project on track and ensuring that project results were achieved.

The project was relevant to Brazil´s National Policy on Climate Change (PNMC, for its acronym in Portuguese) and contributed to UNDP´s country programme with Brazil. The knowledge generated by the 4NC is expected to inform climate change and development policies, plans and projects at the national and subnational levels in Brazil. Stakeholders interviewed for this evaluation, including representatives of line Ministries and State governments, confirmed that the knowledge made available by the project is useful to the mission of their organizations.

The sustainability of project results is deemed likely, under the assumption that financial support from GEF to future reporting processes will continue to be available. The social and political environment in Brazil may continue to add complexity to the implementation of similar projects and it is a process that should be monitored.

1.4. Synthesis of lessons learned

The project to support the preparation of 4NC and BURs generated experiences and lessons that are relevant for future enabling activities to support the reporting to UNFCCC by Brazil and other developing countries. Some of the lessons learned from the project include the following:

1. The expertise, information, and professional networks available through experts and organizations affiliated to Rede CLIMA is a critically important asset to meet Brazil's reporting commitments under UNFCCC. There is an opportunity to build on this asset and expand the scope and diversity of stakeholders contributing to NCs. On the one hand, there is an opportunity to engage with universities and research organizations that have not had leading roles in the elaboration of earlier NCs, but that have specific sectoral or regional expertise to contribute to future reporting processes. On the other hand, the role on climate change action and the levels of expertise of States and municipal authorities have evolved and these actors could have a more active participation in the elaboration of NCs.

2. In Brazil, the process to report to UNFCCC is technically sound, supported by science, and by committed experts and organizations. However, the process is largely dependent on the availability of external financial resources from GEF, which makes the process vulnerable and limits the options available to plan and implement reporting-related activities. With increased reporting

demands under the Paris Agreement and its enhanced transparency framework, risks from a vulnerable reporting process will become increasingly relevant.

3. Support to the reporting process in Brazil has progressively developed the in-country capacities to generate, analyze, review, and validate the information in NCs and BURs. However, the process itself to develop these capacities has not been systematic. The upcoming project to support 5NC offers an opportunity to engage in a systematic process to develop capacities that focuses on identifying strengths and weaknesses, with a view to prioritizing measures to reduce the vulnerability of the process.

4. Administrative procedures to formalize partnerships are time-consuming and opportunities to streamline them are limited since they need to respond to legal requirements from the Brazilian government and participating project partners. An immediate step that could be explored is to include the fiduciary role of intermediary non-for-profit organizations (i.e. public foundations) in the management arrangements of upcoming projects to support NCs and biennial reports to UNFCCC. The role of intermediary non-for-profit organizations in the management arrangements could be that of responsible parties or a similar function that is compatible with the implementation modalities followed for the execution of enabling activities to support reporting to UNFCCC in Brazil.

5. The complexity of projects to support NCs and biennial reports in Brazil is increasing as reporting requirements under UNFCCC evolve, UNDP/GEF policies and requirements are revised, participation levels increase, and the scope, depth and thoroughness of the analysis completed for NCs continue to improve. That level of complexity is not fully reflected in project design and was evidenced by a relatively weak ProDoc that left important elements of project design to be completed during implementation (e.g. management arrangements, PRF, stakeholders' engagement, gender mainstreaming, communications strategy, etc.). While some of these elements were not a requirement when the ProDoc was prepared and approved, the root cause for a less than optimal ProDoc is the absence of a project preparation grant (PPG) phase to provide the time and financial resources needed to address missing or weak project design elements.

1.5. Recommendations

The following table summarizes the recommendations produced by this terminal evaluation.

Table 3. Recommendations summary table

No.	Recommendation	Entity Responsible	Timeframe
1	Finalize project terminal report The experiences with preparation of the 4NC and BURs in Brazil are relevant to future reporting to UNFCCC in Brazil, and for reporting by other non-Annex I Parties, including countries in Latin America and the Caribbean. The improvements to the approaches, methodologies, and emissions factors used for the elaboration of the GHG inventory are notable, as is the approach on water, food, energy and socioeconomic securities that was chosen for the	Project team supported by UNDP	Before project closure

	assessment of vulnerability to climate change. The institutional arrangements for the elaboration of NCs, based on long-term partnerships with organizations affiliated to Rede CLIMA is also worth showcasing. Therefore, this evaluation recommends that the project team finalizes a project terminal report that provides a critical review of the project experiences, emphasizing on lessons learned, and opportunities for improvement by subsequent replication initiatives. The completion report could be professionally translated into English and/or Spanish and be widely disseminated, with support from UNDP.		
2	Design of upcoming project to support reporting to UNFCCC Brazil has started the process to request financial support from GEF for the preparation of the Fifth National Communication (5NC), and upcoming BURs and Biennial Transparency Reports (BTRs). In that context, the following recommendations could be taken into consideration for the design of that project: • Stakeholders´ analysis and engagement plan. A key factor contributing to the success of the project for the elaboration of 4NC were the partnerships with organizations affiliated to Rede CLIMA and other stakeholders, and how effectively these partnerships were managed by the project team. To replicate and further improve this experience in the upcoming project, the project design may be supported by a stakeholders´ analysis and engagement plan prepared during the project formulation or early implementation stages. • Engage earlier with State and subnational actors. During the preparation of 4NC, State governments and subnational actors were consulted and informed of project products (e.g. GHG inventory, vulnerability assessment, etc.), but had limited roles during earlier phases of design and elaboration of those products. During the preparation of 5NC, stakeholders may want to consider engaging with State and subnational actor at earlier stages to further improve the relevance and ownership of project results at regional and local levels. • Build on the diversity of project partners. The number and diversity of actors who participated in the elaboration of 4NC was remarkable (over 450 experts representing close to 220 organizations). That level of engagement is a key asset of the UNFCCC reporting process in Brazil. Project partners for the elaboration of 5NC are encouraged to build on that asset by increasing the diversity of organizations that participate in the process by, for example, reaching out to underrepresented regions, and sectors. • Gender analysis and action plan. Gender-dimensions were not fully incorporated in the project design -it was not a requirement at the time- and had a limited scope during project implementation. It is recommended to address this shortcoming during the preparation of the project to support 5NC by, inter alia, the elaboration of a gender analysis and	UNDP, MCTI	Before submission to GEF of project document and CEO endorsement request

	action plan that defines gender-responsive actions and indicators. • Communications. The communication's function was formally incorporated into project management towards the end of project implementation, in 2020, with the incorporation of a communications analyst and the adoption of a communication plan. It is recommended to include the communication's function in the design of the project to support 5NC and as soon as the project starts implementation. • Project results framework. The indicators and targets in the PRF had limited use at intermediate stages of project implementation. To improve the usefulness of the PRF as a project management tool, the recommendation made in the MTR report could be revisited to include in the PRF a combination of results and process indicators with relevant targets at mid-term.		

2. Introduction

2.1. Purpose of the TE

The objective of the terminal evaluation (TE) of the project on "Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)" was to assess the project design, its implementation, and the achievement of results. The overall performance of the project was assessed against the expectations set in the project document (ProDoc), and against the achievement of the project targets as contained in the project results framework (PRF). The TE assessed project results in terms of their relevance, effectiveness, and efficiency. The achievement of project results was also evaluated in terms of their sustainability.

The purpose of the TE was to (i) promote accountability and transparency, (ii) identify and record lessons learned and recommendations to improve future operations, (iii) evaluate the contribution of project results to GEF strategic objectives on global environmental benefits, and (iv) assess the alignment of the project with UNDP priorities in the host country, Brazil.

2.2. Scope and methodology

The TE was an in-depth evaluation on the entire project based on: (i) a desk-review of project documentation; (ii) semi-structured interviews with key informants; (iii) interviews with the project team; and, (iv) interviews with UNDP staff. The TE followed a participatory approach that engaged key stakeholders and kept them informed of the evaluation process. Due to restrictions from the global COVID-19 pandemic, no travel, field missions, site-visits, or in-person meetings could be conducted during this TE.

The evaluation criteria matrix was the main tool to guide the evaluation process. The evaluation criteria matrix had been prepared based on the Terms of Reference (ToRs) for the TE, UNDP/GEF evaluation policies, UNDP's "Guidance for Terminal Evaluation of UNDP-Supported, GEF-Financed Projects" (2020), the general standards set in the recently adopted "UNDP Evaluation Guidelines" (2021), the results from the initial desk-review completed as part of the preparation of the inception report, and the conclusions from the teleconference to kick start this TE (16 September 2021). The evaluation criteria matrix is included in Annex D of this report.

2.3. Data collection and analysis

The desk review of the project documentation included: (i) the ProDoc and annexes; (ii) the GEF CEO endorsement request; (iii) annual work plans (AWPs); (iv) Project Implementation Reviews (PIRs) reports; (v) minutes of Project Steering Committee (PSC) meetings; (vi) mid-term review (MTR) report and management responses; (vii) audit reports; (viii) technical reports of project outputs, (ix) project publications and outreach materials, and (x) other reports or documents that were useful to the TE. A list of all documents reviewed for this evaluation is presented in Annex C. Information and data were collected in accordance with the evaluation criteria matrix agreed at the inception phase and included in this report as Annex D.

Given the restrictions from the global COVID-19 pandemic, all interviews had to be conducted remotely, by videoconference. Interviews and email communications with project management team members at MCTI were used to gather additional information and their insights on different aspects of the project design, implementation, and results. Interviews with key informants used as a guide a semi-structured questionnaire developed for this evaluation. Key stakeholders interviewed included:

- Members of the project management unit (PMU);
- Representatives from:
    - Brazilian Agricultural Research Corporation (EMBRAPA);
    - Environmental Company of the State of Sao Paulo (CETESB);
    - Instituto Federal de Alagoas (IFAL);
    - Ministry of Agriculture, Livestock and Supply;
    - Ministry of Health;
    - Ministry of Mines and Energy.
- UNDP country office in Brazil; and,
- Project consultants.

A complete list of persons interviews during this TE is available in Annex B.

2.4. Ethics

The terminal evaluation was conducted following the principles contained in the ethical guidelines for evaluations[4] adopted by the United Nations Evaluation Group (UNEG). The evaluator signed the Code of Conduct for Evaluators, and this is included in Annex F.

2.5. Limitations to the evaluation

Restrictions from to the global COVID-19 pandemic prevented the completion of an evaluation mission.

2.6. Structure of the MTR report

The TE report is presented following the structure recommended in UNDP's "Guidance for Terminal Evaluation of UNDP-Supported, GEF-Financed Projects":

- Section 1. Executive summary;
- Section 2. Introduction (purpose, objectives, scope and methodology of the TE);
- Section 3. Project description (development context, problems, objectives, milestones, budget, and stakeholders);
- Section 4. Findings (project design, implementation, and results);
- Section 5. Conclusions, recommendations, and lessons learned; and,
- Annexes (e.g. TE ToRs, list of documents reviews, list of persons interviewed, evaluation criteria matrix, etc.)

[4] UNEG, 2008, "Ethical Guidelines for Evaluations". Available under < http://www.unevaluation.org/document/detail/102>

3. Project Description

3.1. Project start and duration, including milestones

The project had a planned duration of four years (48 months), starting on the ProDoc's signature date on 11th August 2016. The planned operational closing date was therefore on 10th August 2020. The planned operational closing date was extended to 11th December 2021. Table 4, below, lists the main project milestones.

Table 4. Project milestones

Milestone	Date
PIF approval	2 May 2013
CEO Endorsement	11 May 2016
ProDoc signature	11 August 2016
Inception workshop	N.A.
Project manager hiring	12 September 2016
Meetings of the project steering committee	26 October 2017 20 June 2018 24 September 2020 3 December 2020 18 January 2021 19 April 2021 24 May 2021
Mid-term review	14 June 2019
Terminal evaluation	15 November 2021
Planned operational closing date	10 August 2020
Revised operational closing date	11 December 2021

Source: Mid-term review, minutes of PSC meetings, CEO Endorsement Request. Interviews with members of the PMU.

3.2. Development context

Brazil was the first Party to sign the UNFCCC on 4 June 2002, and it later ratified the agreement on 28 February 1994. The UNFCCC sets reporting obligations to member Parties, including Parties not included in its Annex I (i.e. non-Annex I Parties). As part of these requirements, non-Annex I Parties must prepare and submit, every four years, national communications (NCs) that should include, as a minimum, a description of national circumstances, priorities and objectives related to the implementation of the Convention, a national inventory of all emissions and removals of GHG not controlled by the Montreal Protocol, and a description of the climate change mitigation and adaptation actions planned to implement the UNFCCC. Additionally, Parties may also provide relevant information on access to and transfer of environmentally sound technologies, capacity building, education and public awareness, research and systemic observation, and information sharing and networking.[5] Requirements to submit periodic NCs were enhanced in 2010 with the adoption by Parties to the UNFCCC of provisions for the preparation and submission of Biennial Update Reports (BURs), containing updates to the GHG inventory, details on actions to mitigate climate change, and a description of needs and support received to implemented these actions.[6] Brazil had submitted its initial NC (INC) on 10 December 2004, second NC (SNC) on

[5] UNFCCC, decision 17/CP.8, Annex.
[6] UNFCCC, decision 1/CP.16.

30 November 2010, and third NC (TNC) on 20 April 2016. The first BUR (BUR 1) by Brazil was submitted to the UNFCCC on 31 December 2014.

Brazil adopted in 2009 the National Policy on Climate Change (PNMC, for its acronym in Portuguese). The policy sets objectives for climate change action that are aligned to broader sustainable development goals, including economic growth, eradication of poverty, and reduction of social inequalities. The policy defines key plans and instruments for climate change action including: (i) the National Plan on Climate Change; (ii) the National Fund on Climate Change; (iii) action plans for the prevention and control of deforestation in the Amazon and Cerrado ecosystems; (iv) mitigation and adaptation plans in agriculture, energy, and charcoal production; (v) National Communications to UNFCCC; (vi) fiscal and tax measures; (vi) credit and financing facilities; (vii) research programs by development agencies; and, (viii) other financial and economic for climate change mitigation and adaptation. The Interministerial Committee on Climate Change (CIM, for its acronym in Portuguese) is responsible for setting guidelines and coordinating the implementation of climate change actions and policies. CIM was established by Decree No. 10,145 of 2019.[7]

The Paris Agreement was adopted by Parties to the UNFCCC, including Brazil, in 2015. The Agreement requires Parties to prepare and submit nationally determined contributions (NDCs) that set objectives and communicate actions on climate mitigation and, optionally, describe climate change adaptation actions. NDCs are revised periodically to enhance the level of ambition by Parties. Brazil submitted its first NDC on September 2016 and an update to that NDC in December 2020. The updated NDC sets an economy-wide target to reduce net GHG emissions by 37% below 2005 levels in 2025, and by 43% in 2030.[8]

3.3. Problems that the project sought to address

The project supported activities in Brazil for the preparation and submission to UNFCCC of 4NC and BURs. The project gave continuity to earlier enabling activities that contributed to the preparation and submission of INC, SNC and TNC. The preparation of 4NC built on the experience and knowledge accumulated during these earlier processes, while continuing to improve the methodologies, approaches, and quality of the information and analysis employed in earlier NCs.

GEF approved the enabling activity project to support Brazil's INC in June 1996 and the communication was submitted to UNFCCC eight years later, in 2004. INC included Brazil's first GHG inventory, which required a significant effort for the adoption of methodologies, and for the collection of emissions factors and activity data. GEF support to SNC was available in 2006, and allowed improvements to the GHG inventory, the elaboration of vulnerability assessments, and the discussion of climate change adaptation measures. Work on TNC initiated in 2010, improving the quality of the GHG inventory, and incorporating climate change scenarios based on the Brazilian Earth System Model (BESM) to inform vulnerability assessments.[9]

The project to support 4NC sought to make improvements to the reporting process, including: (i) updating and improving the database underpinning national GHG inventories to improve access, transparency, and continuity, (ii) utilizing satellite images of the Amazon, Cerrado and Caatinga biomes taken at shorter time intervals to improve the accuracy of the GHG inventory for the land use, land-use change and forestry

[7] 4NC, pp. 69 – 70.
[8] Government of Brazil. Paris Agreement, Brazil's Nationally Determined Contribution (NDC). Annex. Available on the UNFCCC website under <https://www4.unfccc.int/sites/NDCStaging/Pages/Party.aspx?party=BRA>. Retrieved on 28 September 2021.
[9] ProDoc, pp. 10 – 12.

(LULUCF) sector; (iii) improving the performance and accuracy of downscaling methodologies for climate General Circulation Models (GCM) to reduce the uncertainty of vulnerability assessments; and, (iv) strengthening and expanding partnerships with institutions affiliated to Rede CLIMA.[10]

3.4. Immediate and development objectives of the project

The objective of the project was to assist the Government of Brazil to perform the activities necessary to prepare 4NC and BURs in accordance with the UNFCCC.[11] The ultimate goal of the project was to enable the Government of Brazil to enhance available emissions data, performing targeted research, and strengthening technical capacity and institutions to address both climate change mitigation and adaptation.[12] The knowledge generated by the project is expected to support climate change mitigation and adaptation actions at the Federal, State, and local levels.

3.5. Expected results

In the ProDoc, the expected results of the project were defined in terms of the completion of individual elements of 4NC (i.e. GHG inventory, assessment of national circumstances, assessments of climate change impacts and vulnerability, etc.), the submission of 4NC and BURs to UNFCCC, and the development of capacities related to education, training, and public awareness on climate change.

3.6. Project budget

The project received a GEF-grant for USD 7,528,500 allocated to six outcomes and project management. Table 5 provides an overview of the project budget and the allocation of the GEF-grant among outcomes.

Table 5. Allocation of GEF-grant among project outcomes

Project outcome	Amount	Fraction
1. National GHG inventory is improved and updated	USD 3,250,000	43%
2. National circumstances and envisaged steps for the Convention implementation	USD 440,000	6%
3. Vulnerability assessment and adaptation measures	USD 1,550,000	21%
4. Public awareness and education strategy	USD 700,000	9%
5. Publication and submission of 4VC	USD 230,000	3%
6. Publication and submission of BURs	USD 1,000,000	13%
Project management cost	USD 358,500	5%
Total project financing	**USD 7,528,500**	**100%**

Source: Adapted from ProDoc, p. 36

3.7. Main stakeholders

The main project stakeholders identified in the ProDoc are organizations affiliated to Rede CLIMA. Rede CLIMA was established in 2007 to bring together experts from universities and research organizations to collaborate on the research and dissemination of climate-change-related knowledge, with a view to informing climate change policies and actions in Brazil. The network is led by National Institute of Spatial Research (INPE). Organizations affiliated to Rede CLIMA that were expected to participate in the elaboration of 4NC included research institutes (e.g. INPE, the National Institute of Environmental Research (INPA), and Brazilian Agricultural Research Corporation (EMBRAPA), etc.), and universities

[10] ProDoc, pp. 7, 12 – 13.
[11] ProDoc, p. 16
[12] Op.cit.

(e.g. Federal University of Ceará (UFC), Federal University of Rio De Janeiro (UFRJ), University of Brasilia (UnB), University of São Paulo (USP), etc.).[13]

In addition to entities affiliated to Rede CLIMA, the ProDoc also listed in Annex C stakeholders from the national government (e.g. Ministry of Foreign Affairs, Ministry of Finance, Ministry of Mines and Energy (MME), National Civil Aviation Agency (ANAC), etc.), the private sector (Brazilian Association of Portland Cement (ABCP), Brazilian Chemical Industry Association (ABIQUIM), Brazilian Coal Association (ABCM), Petrobras, etc.), and agencies of subnational governments (e.g. Sao Paulo State Environmental Company (CETESB)).[14]

[13] ProDoc, p. 22.
[14] ProDoc, Annex C, pp. 61 – 63.

4. Findings

4.1. Project Design/Formulation

4.1.1. Analysis of project results framework

The PRF had shortcomings that limited its value as a project management tool. These limitations were evaluated and discussed in the MTR report. The main weakness in the PRF was related to the lack of adequate *process* indicators and targets to track the progress of the project at different stages of project implementation. Moreover, several indicators in the PRF did not meet the characteristics of a SMART indicator (i.e. specific, measurable, attributable, relevant, and time-bound).[15] The ProDoc proposed to hold an inception workshop to, inter alia, finalize the monitoring and evaluation (M&E) plan, including a revision to the indicators in the PRF.[16] The workshop, however, was not held. While the indicators in the PRF were not useful to assess progress at intermediate stages of project implementation, they did provide a sound basis for the assessment of progress at end-of-project. The indicators, including their baseline and target values were not revised during project implementation. The PRF is presented in Annex K of this TE report.

4.1.2. Assumptions and risks

Critical assumptions and risks were listed in the PRF and a risk analysis was summarized in a risk log included in Annex B of the ProDoc. The assumptions listed were reasonable and sound. The risks registered in the risk log were reasonable and the proposed risk management measures were adequate. The main risk having an impact on project implementation was related to delays resulting from the need to engage and coordinate with a large number of stakeholders. Indeed, the formalization of agreements with partner institutions was a relevant cause for delays, especially during the early months of project implementation (the probability of that risk was appropriately listed as high (5) in the risk log). The project had to navigate complex changes in the political landscape in Brazil, but it was effective at maintaining the necessary partnerships to ensure the continuous support to project activities, especially during the validation of project results by the national government.

A risk related to changes in the exchange rate of the Brazilian Real against the U.S. dollar was not included in the original risk analysis, but it was identified and included in the risk management framework by the time of the 2020 PIR.[17] In hindsight, it is evident that the global COVID-19 pandemic and the ensuing economic slowdown impacted project implementation and evaluability but, for obvious reasons, the pandemic could not have been predicted during project design. The risk related to the pandemic had also been identified as an emerging risk by the time of the 2020 PIR.

4.1.3. Lessons from other relevant projects incorporated into project design

The ProDoc includes a discussion on earlier processes to support NCs in Brazil. The discussion summarizes highlights, improvements, and gaps in the elaboration of INC, SNC, and TNC.[18] The design of the project

[15] MTR, p. 11.
[16] ProDoc, p. 39.
[17] Changes in exchange rates were discussed in the Section F of the ProDoc, on monitoring framework and evaluation (p. 40), but they were not listed as a risk.
[18] ProDoc, pp 10 – 12.

to support 4NC takes into account these features and defines a logical process to continue the incremental improvements to the technical aspects of NCs in Brazil.

Key factors that affected the performance of the enabling activity to support the elaboration of the Brazilian TNC, highlighted in the final evaluation of that project, emerged as limiting factors again during the implementation of the current project to support 4NC. Some of these factors included delays in the implementation of activities due to the administrative procedures necessary for the formalization of collaboration agreements with partner institutions; and technical and infrastructure limitations (i.e. computing requirements) for the elaboration of new and update climate change scenarios and analysis.[19] Some recommendations included in that final evaluation were implemented during project design and implementation (e.g. expanding the collaboration with institutions members of Rede CLIMA and with the Brazilian Institute of Geography and Statistics (IBGE), using data from the national forest inventory as an input to the GHG inventory, etc.), while others could only be partially implemented (e.g. expanding the collaboration with State and municipal authorities during the elaboration of NCs).

4.1.4. Planned stakeholder participation

In section B. (pages 22 – 23) and in Annex C, the ProDoc listed stakeholders and a limited description of their roles and responsibilities under the project. The ProDoc did not include a stakeholder engagement plan, but such a plan was not mandatory at the time the document was produced. The main group of stakeholders were institutions affiliated to Rede CLIMA who were expected to have an active role in the elaboration of the project outputs. Other organizations, including line Ministries and private sector organizations (e.g. business associations) were identified in the ProDoc and allocated roles as providers of information for the elaboration of the GHG inventory (output 1.3.), and -oddly- as stakeholders for the publication of BURs only (output 6.1.). The limited scope of the stakeholders' analysis included in the ProDoc is a relatively minor shortcoming that did not have an impact on project implementation, as the project team could effectively establish and maintain partnerships with a broader set of organizations and individuals who participated in a larger number project activities than those anticipated in the ProDoc.

4.1.5. Linkages between the project and other initiatives

The ProDoc listed only one related initiative that could provide an opportunity for collaboration: "Mitigation Options of Greenhouse Gas (GHG) Emissions in Key Sectors in Brazil" (GEF ID 4254).[20] This project, financed by GEF and implemented with support from the United Nations Environment Program (UNEP), built the capacities of the Government of Brazil for the implementation of climate change mitigation actions in the energy, industry, LULUCF, residential, transport, and waste sectors. The project was completed in January 2018.[21]

The identification provided in the ProDoc of potential opportunities for collaboration and coordination with related initiatives did not cover the full scope of these opportunities, as there were several ongoing initiatives by government institutions and organizations affiliated to Rede CLIMA that, either supported the activities for the preparation of 4NC and BURs, or required close coordination with these activities (e.g. activities to enhance the NDC or to implement the national adaptation plan (NAP)).

[19] UNDP, GEF. Third National Communication to the United Nations Framework on Climate Change – UNFCCC Brazil. Final Evaluation. 2016
[20] ProDoc, page 23.
[21] UNEP, GEF. Mitigation Options of GHG Emissions in Key Sectors in Brazil. Terminal Evaluation. 2018.

4.1.6. Gender responsiveness of project design

The ProDoc included no considerations on gender issues, partially due to nature of the project activities, and also because including them was not a requirement by GEF or UNDP at the time the project was designed. The CEO endorsement request indicated that gender concerns would be taken into consideration in the context of capacity building activities, the analysis of adaptation measures, and in the research work for the elaboration of climate change scenarios (it is not immediately clear how the last task was going to be pursued).

The need to strengthen gender considerations was identified early during project implementation and recommendations to improve the gender strategy were brought forward and recorded in PIRs.[22] The project purposefully recruited qualified female experts to participate in project activities.[23] However, a gender analysis recommended in the PIR for 2018 was not completed.

4.1.7. Social and Environmental Safeguards

No social and environmental screening was completed since one was not required by UNDP or GEF policies.

4.2. Project Implementation

4.2.1. Adaptive management

The project team faced notoriously challenging conditions for the implementation of project activities. The team and stakeholders had to navigate changes in the political and institutional landscape in Brazil. These changes added complexity and uncertainty to project activities, especially to those requiring the input or consensus by government authorities. Surely, the emergency and restrictions brought by the global COVID-19 pandemic only added to these challenges. However, based on the interviews with project stakeholders conducted as part of this evaluation and taking into consideration the scope, quality and timing of project deliverables, the conclusion from this evaluation is that the project team was remarkably skilled at coping with these challenges. Stakeholders interviewed praised the project team for their ability to plan ahead, to identify and implement solutions, and to communicate with project partners in clear and effective ways. The team monitored closely institutional changes taking place in partner institutions, keeping track of newcomers and departing counterparts, and maintaining numerous and periodic meetings with partners to inform on developments and challenges, and to coordinate activities. It is clear that a very important factor for the success of the project was the project team's ability to maintain and cultivate the numerous, diverse, and fundamental partnerships in these challenging conditions.

Other than two no-cost extensions to the project's implementation timeframe, there were no major changes to the project scope and activities. The first extension was discussed at the meeting of the PSC in July 2019, and the approval to the extension was communicated to the PSC in the following meeting. The extension was adequately documented in PIRs for 2019, and 2020. The second extension granted four additional months of project implementation time to compensate for delays due to the emergency from the global COVID-19 pandemic. [24]

The M&E plan included in the ProDoc made provisions for an inception workshop to take place within the first three months of project implementation. The workshop was intended to provide an opportunity to the

[22] PIR for 2018, p. 21, PIR for 2021. P. 38
[23] PIR for 2018, p. 22, MTR p. 18.
[24] Minutes of PSC meetings in June 2019 and September 2020, comments to the draft TE report.

project team and stakeholders to better understand and take ownership of the project. At the workshop, it was also expected that the PRF (i.e. indicators, target, means of verification, risks, and assumptions) would be revised and improved. However, the inception workshop did not take place as planned. Not holding the workshop was a missed opportunity to improve the PRF and perhaps to streamline the execution of activities during the early months of project implementation when progress was slow.

The project team was reorganized during 2017 to respond to institutional changes. These changes had a limited impact on project execution during the first months of activities, but the delays were promptly addressed by the new project team appointed by MCTI that year.[25]

Most recommendations (7 of 9) from the MTR were related to the design of the upcoming project to support the elaboration of Brazil's 5NC. While all recommendations for the upcoming project are valid and were welcomed by the project team, they were not relevant to the implementation of the current project and did not provide guidance to the team on how to improve performance during the final 30 months of activities. Table 6 lists the recommendations provided in the MTR report, the management response provided, and comments by this evaluation.

Table 6. Recommendation from mid-term review

Recommendations[†]	**Management response**[‡]	**Comments**
A. Revisions to PRODOC Results Framework/Logframe		
Given that the Project is at the midpoint of implementation and progress seems to be proceeding satisfactorily with no major issues found it is not recommended to revise the Logframe (e.g., replacing existing indicators with SMART indicators and estimating new, quantifiable targets) at this time. However, in looking ahead to the Terminal Evaluation (TE) there are several issues that should be addressed at this time. These are: - project extension. The existing PMU strategy for the remaining half of the Project calls for submission of an approved NC in December 2020, 4 months later than is called for in the PRODOC and additional 12 months for outreach, communication and information dissemination activities following the NC submission for a total of 16 months. The Mission believes that a no-cost extension is warranted; - elimination of a component activity. Under Component/Outcome 3, the PRODOC calls for the establishment of a network of low cost data collection devices for the assessment of the human perception of climate variability. This appears to be an "orphan" activity and should be dropped (or modified) and the indicator/target eliminated (or revised); and - revision of indicator (or revision of means of monitoring/reporting). Under Component/Outcome 4 it is not clear how	In general, there is consensus between the evaluator, the project team and UNDP on the proposed recommendations. Since the implementation of the MTR mission in April 2019, some initiatives have been taken to find solutions for some of the indicated points, such as promoting contact with a new potential partner to develop activities related to the evaluation of human perception about vulnerability to change of climate; as well as some meetings were held between the PMU/MCTIC and UNDP to deal with the execution of the budget and planned activities until the end of the execution of the project considering its extension. Thus, we consider that the recommendation to drop or modify the Output 3.4 of the PRODOC at that time would not be appropriate, since there is a possibility of establishing a partnership that meets this demand. In addition, the recommendation for sharing the updated strategic work plan to the review and discussion with UNDP is ongoing. It is important to note that faced with the new national political scenario and its respective priorities, it is possible that the process of approval of the 4NC document to be submitted to the UNFCCC will extend beyond the planned period. Thus, the	The project extension was appropriately requested, communicated to the PSC, and approved by UNDP/GEF. The scope of output 3.4. was adjusted following the finalization of the MTR. The revised scope allowed for the implementation of two surveys on climate change perceptions among (i) the general public, and (ii) officials at State and municipal governments. Apparently, the recommendation to revise the indicator/means of verification for outcome 4 referred to the project objective's indicator (D), on the "level of institutional capacity in Brazil for education, training and public awareness related to climate change" and not necessarily on the indicators on outcome 4. Indeed, the ProDoc did not define adequate targets and means of verification for indicator (D) of the project objective. That indicator was not revised during project implementation limiting its use to monitor and evaluate project results.

[25] PIR for 2018, p. 20.

Recommendations[†]	Management response[‡]	Comments
the preparation and distribution of knowledge products as reported in the PIR 1 and partial PIR 2 will lead to increasing level of institutional capacity in Brazil for education, training and public awareness related to climate change (the respective Results Framework/Logframe indicator). Either the indicator should be changed or provide a different means of monitoring and reporting progress against it. It is further recommended that these changes and more generally, the main results and recommendations resulting from the PMU strategic planning workshop held in February 2019 should be put into a proposal including budget and calendar to cover the remainder period of project implementation (including the extension) to review and discus with UNDP.	extension of the project is absolutely necessary to ensure that all stages of project work and completion are completed in a safe and viable way.	
B. Transition between 4NC and 5NC		
The PMU/UNDP should avail of the opportunity to bring the lessons learned derived from the 4NC into the project design of the 5NC formerly and work for a more robust and clearer PRODOC and a Logframe that can be used as a useful M&E and reporting tool. The recommended "no cost" extension above would provide an ideal opportunity to do this in parallel to the other proposed activities following the submission of the 4NC.	The PMU/MCTIC fully agrees with this recommendation, including intending to contract specialized consulting for the development of PRODOC of 5NC, in order to ensure improvement in the project indicators.	The PMU planned workshops to evaluate the technical activities and identify lessons learned, but these could not take place due to restrictions from COVID-19. Instead the PMU conducted a survey of project partners and will produce a report. While the PIF for the project to support the elaboration of 5NC has already been prepared, it is too early to evaluate the degree to which lessons from the current project are being incorporated.
C. Consideration to expand/diversify 5NC initiatives		
The 5NC process provides the opportunity to continue to build on the strength of previous NCs. It is suggested that the PMU, building on many of its own initiatives, should consider supporting: (i) greater inter-ministerial outreach; (ii) broadening the circle of traditional partner institutions; (iii) increasing public awareness and communication; (iv) incorporating State and municipal governments into the process; (v) putting greater emphasis on broadening and diversifying the message of the NC to reach "the people;" and (vi) developing a communication strategy and plan to be incorporated into project design of the 5NC.	The recommendation is aligned with expectations for the future project and, as far as possible, will be taken into account during the preparation of the 5NC project document.	Similarly to the response to recommendation (B), above, it is too early to make a determination about the design of the project to support the elaboration of 5NC.
D. Use of process indicators		
Simple process indicators should be developed and included in the 5NC results framework to facilitate tracking and evaluating project progress perhaps using	The recommendation is aligned with expectations for the future project and, as far as possible, will be taken into account during the preparation of the 5NC project document.	See comment above.

Recommendations[†]	Management response[‡]	Comments
the LOAs as a basis to identify indicators and targets per component/sub-component.		
E. Inception workshops		
For the 5NC it is recommended that an inception workshop, scheduled for the first trimester following project initiation, be built into project design with accompanying indicator and budget	The recommendation is aligned with expectations for the future project and, as far as possible, will be taken into account during the preparation of the 5NC project document. In addition, it intends to take advantage of the final period of execution of the 4NC project to ensure the best possible transition to the next project, in order to facilitate the realization of the inception workshop, and other important initial steps, in the beginning of 5NC.	The PIF for the project to support the elaboration of 5NC does include a provision for an inception workshop.
F. UNDP project support		
In the coming 5NC, dependent on staff changeover in the PMU and broadening and inclusion of new partners, UNDP may want to consider supporting additional workshops early during the implementation of the project in particular in explaining administrative, budgeting and reporting requirements.	The PMU/ MCTIC and UNDP recognize the importance of this recommendation and will take it into account in the process of implementing and during the 5NC project execution.	It is too early to assess the design and implementation of the project to support the elaboration of 5NC.
G. Strategic workshops		
The Mission recommends that the PMU consider the increased use of strategic workshops (e.g., similar to the February 2019 workshop) perhaps on an annual basis starting during the PRODOC design process of 5NC and followed in anticipation of AWP preparation.	Strategic planning meetings/workshops of the project team, such as the one held in February 2019, as well as monitoring meetings of the project activities with the partners are held periodically since 2017. The recommendation is aligned with expectations for the future project and, as far as possible, will be taken into account during the preparation of the 5NC project document.	It is too early to assess the design process of the project to support the elaboration of 5NC.
H. Tripartite Committee		
The Mission recommends that the Tripartite Committee TPC should meet on a "when and as needed" basis.	In relation to the experience gained during the execution of the 4NC project, the recommendation reflects our perception that the frequency of meetings foreseen in PRODOC does not meet the real need. In this way, anticipating tripartite meetings only "when and as needed" is aligned with expectations for the future project and, as far as possible, will be taken into account during the preparation of the 5NC project document.	While it is early to assess the design of the project to support the elaboration of 5NC, it is noted that the PIF for that project indicates that the project board will meet annually instead of "as-needed" as recommended by the MTR and acknowledged by the PMU and UNDP.
I. Co-financing		
Though not a GEF requirement for EA projects, the PMU and UNDP may want to consider identifying and tracking sources and amounts of co-financing to have on hand at the time of the Terminal Evaluation (TE); always useful to report as an indicator	This recommendation is very interesting and will be implemented as far as possible. This opportunity may indicate that the amount was even greater than initially estimated through the co–financing letters from the partner institutions.	The PMU did not formally monitor and report co-financing contributions by project partners. However, the PMU estimated that all contributions from government

Recommendations†	Management response‡	Comments
of government and public support for the NC process.		sources[26] met the amounts pledged at the stage of project design and approval.
J. Wider dissemination of Brazil's NC experience		
Brazil's cumulative and evolutionary experience over 4 NCs has led to the development of relative sophisticated and effective institutional arrangements and processes, particularly in the preparation of the GHG Inventory. This approach appears to be both highly valuable and likely to be unique. It is suggested external resources should be sough, perhaps with the assistance of UNDP/GEF/UNFCCC to support greater efforts to disseminate these experiences (e.g., an international workshop attended by other countries to share experiences and compare lessons learned).	The recommendation is aligned with the work plan activities for this year and it will be put in place. The PMU plans discussions with other actors to share our experiences, as well as identifying ways of improving, including identifying other national and international events beyond CoP-UNFCCC.	MCTI has put forward a proposal for a side-event at COP26 to showcase different aspects of 4NC including the integrative approach to vulnerability assessment and others.

† Quoted from MTR report, recommendation summary table, pp. ix – x.

‡ Quoted from management response to the MTR.

4.2.2. Actual stakeholder participation and partnership arrangements

More than 450 experts representing close to 220 organizations from the national government, subnational governments, Universities, research institutions, private sector, and civil society participated in the elaboration, review, and validation of project deliverables. Of these, 185 authored the 4NC or participated in the production of technical reports, 219 collaborated with the elaboration of project outputs, and 28 contributed indirectly during the public consultation of project results.[27] The diversity and technical expertise of the organizations and individuals who contribute to the process of reporting to UNFCCC by Brazil is a remarkable strength.

The organizations affiliated to Rede CLIMA made a critical contribution to the project results. Rede CLIMA is a notable asset of Brazil that supports climate change decision-making in general, and the process of elaboration of NCs and BURs, in particular. The project signed letters of agreement, contracts, letters of notification and work agreements with members of Rede CLIMA to enable and facilitate the participation of these organizations and individuals in project activities. Among others, the project collaborated with the following organizations:

- Brazilian Agricultural Research Corporation (Embrapa);
- Brazilian Forestry Service (SFB);
- Brazilian Institute of Geography and Statistics (IBGE);
- Coppetec Foundation;
- Institute of Applied Economic Research (IPEA);
- Eliseu Alves Foundation (FEA);

[26] The PMU estimated that the amount of cofinancing contributed by EMBRAPA, Rede CLIMA and INPE reached 100% of the amounts pledged at project design, while the contribution of MCTI reached 98% of the amount pledged.

[27] PIR for 2021, pp. 39, 41; minutes of the September 2020 meeting of the PSC.

- National Civil Aviation Agency (ANAC);
- National Electric Energy Agency (ANEEL);
- National Institute of Space Research (INPE); and,
- Scientific and Technological Development Foundation (FINATEC).[28]

Unfortunately, the procedures to enable the participation of these organizations and individuals represented an administrative challenge to project implementation since significant time and effort were invested by UNDP and the project team to formalize agreements.[29] This obstacle to efficient project implementation is not new, as it was already reported in the evaluation of the project to support the preparation of the TNC.[30] As indicated in that evaluation, these challenges will most likely remain in place in the future and the risks they represent should be incorporated into the design of future projects for the support of NCs in Brazil.

The project was also effective at building and maintaining partnerships with line Ministries. All representatives from line Ministries interviewed for this evaluation expressed that they had opportunities to make meaningful contributions to project activities and that their comments were fully considered by the project team and partners. They also confirmed that they have access to the products and knowledge generated by project and that these are useful to the mission of the organizations they represent.

The following Ministries participated in the preparation and validation of project deliverables:

- Ministry of Agriculture, Livestock and Supply;
- Ministry of Cities;
- Ministry of the Environment;
- Ministry of Finance;
- Ministry of Foreign Affairs;
- Ministry of Health;
- Ministry of Industry, Foreign Trade and Services;
- Ministry of Integration;
- Ministry of Mines and Energy; and,
- Ministry of Social Development.[31]

The participation from stakeholders from State and local authorities was largely limited to the dissemination of project results towards the end of the project implementation period. The project conducted a series of regional online workshops to disseminate project results among State and local authorities. Stakeholders representing State governments interviewed for this evaluation all agreed that the events to share the knowledge generated by the project were well organized and that the information that was provided was useful to the organizations that they represent. Stakeholders appreciated the fact that, for the first time, the information prepared for 4NC was scaled down to the State and regional levels (i.e. Center-West, North, Northwest, South, and Southeast) to provide details on the GHG inventories and vulnerability assessments at the subnational level. Various experts and stakeholders interviewed for this evaluation shared the opinion that, in future reporting processes (e.g. elaboration of 5NC), there will be an opportunity to engage with

[28] PIR for 2018, p. 27
[29] PIR for 2018, p. 18
[30] UNDP, GEF. Third National Communication to the United Nations Framework on Climate Change – UNFCCC Brazil. Final Evaluation. 2016. page 10.

[31] PIR for 2018, p. 27

States and local authorities at earlier stages in the reporting process and that doing so would improve the quality and usefulness of the products.

4.2.3. Project finance and cofinance

The project received a GEF grant for USD 7,528,500 and committed to mobilize USD 22,885,500 in cofinancing resources. Table 7 summarizes the confirmed financing sources at the start the project:

Table 7. Financing sources at project start

Source	Name of Source	Type of Support	Amount (USD)
GEF	GEF Trust Fund	Grant	7,528,500
Cofinancing			
National Government	Ministry of Science, Technology and Innovation	In-kind	1,175,500
	Brazilian Agricultural Research Corporation		9,750,000
	National Institute for Space Research		4,650,000
	Rede CLIMA		7,160,000
Sub-Total Government			**22,735,500**
GEF Implementing Agency	UNDP	Grant	150,000
Total Co-financing			**22,885,500**
Grand total			**30,414,000**

Source: CEO Endorsement Request, pp. 4 – 5.

As of 8 September 2021, the project had disbursed a total of USD 5,110,069 (68%) of the total GEF grant. The main reason for the significant volume of undisbursed grant resources is the devaluation of the Brazilian Real. From August 2016 to August 2021, the devaluation of the Brazilian Real against the U.S. dollar reached 66%, making substantially more resources in local currency available to project activities. To a lesser degree, the rate of disbursement was also affected by COVID-19 as travel and in-person meetings and events were limited by social distancing and safety measures. These factors affected disbursements under individual outcomes differently, as adjustments to project activities and costs were more feasible under some components than others. Therefore, disbursement rates (actual disbursements vs. planned budget) were as high as 88% under outcome 1 (GHG inventory), and as low as 33% under outcome 5 (publication of 4NC). In absolute terms, the largest volume of unspent grant resources (USD 953,000) is related to outcome 3 on vulnerability assessment and adaption measures. In addition to the previously mentioned factors, outcome 3 was also affected by technical challenges related to the delivery of output 3.1., which meant that some activities and expenditures did not take place (see discussion of outcome 3 in section 4.3.2). Figure 1 shows cumulative annual disbursements by the project against the planned budget as listed in the ProDoc; Figure 2 show total disbursements against planned budget for each outcome and project management costs.

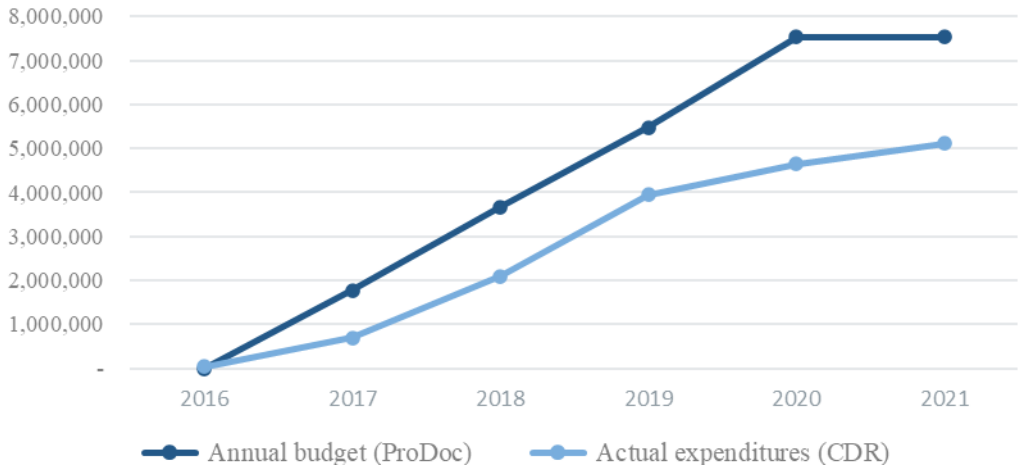


Figure 1. Cumulative budget vs. actual disbursements [USD]

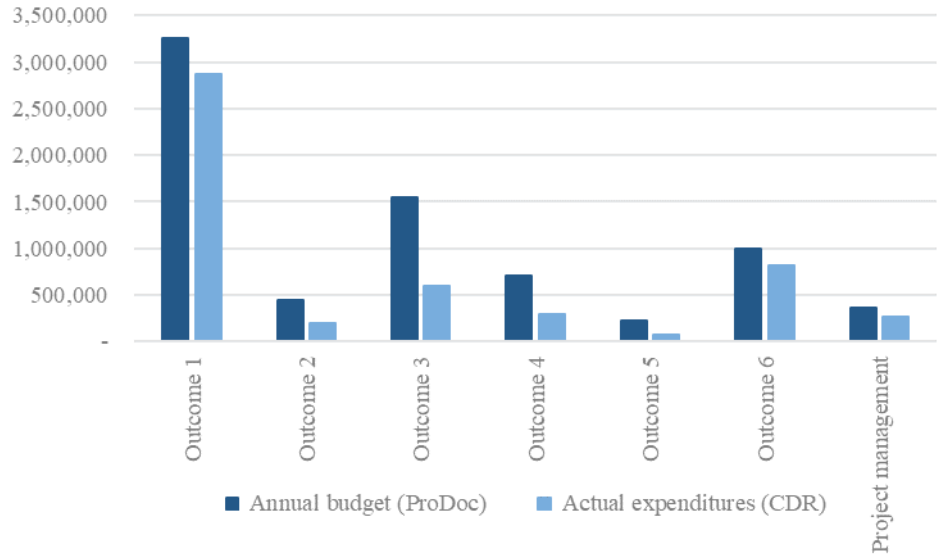


Figure 2. Total budget vs. actual disbursements per outcome [USD]

Except for UNDP's contribution, the contribution of co-financing resources was not monitored during project implementation. While recognizing that GEF policies do not set co-financing requirements for enabling activities, the MTR recommended to monitor and report the contribution of co-financing resources by the time of the TE. The intention behind that practice was to document the support by the government to their reporting commitments under UNFCCC.[32] UNDP's effective contribution of co-financing resources matched the amount originally pledged in the ProDoc (USD 150,000). These resources were used to provide technical inputs to the methodologies for the GHG inventory and other elements of Brazil's 4NC and BURs. Resources were also used to facilitate the exchange of technical information during the 2019 Latin America and the Caribbean Climate Week, held in Salvador (Brazil).[33]

Audits were conducted periodically by the Brazilian Ministry of Transparency and General Comptroller (*Ministério da Transparência e Controladoria-Geral da União*), following auditing standards of the

[32] MTR p. 19.
[33] Communications with UNDP's country office in Brazil.

Government of Brazil, which are compatible with international auditing standards. Audits did not identify significant nonconformities and concluded that the internal financial management controls were adequate, procurement processes were transparent and competitive, and that the products prepared by consultants were in line with the project's objectives and were accepted by the relevant technical reviewers. Most exceptions that were noted on the audit reports were addressed by the project team and/or UNDP. According to interviews with members of the PMU, the last standing exception regarding inputs to the products by one project partner has been fully resolved.

4.2.4. M&E: design at entry, implementation, and overall assessment

Design at entry. The total cost for M&E activities was estimated at USD 105,000, or 1.4% of the total GEF grant. The resources allocated to M&E activities, as a percentage of the total GEF grant, were relatively small as compared to other GEF-supported projects that use 5% of the GEF-grant as a benchmark for the allocation of resources to M&E. However, the relatively small amounts did not seem to have impeded adequate monitoring of project activities. In the ProDoc, the M&E plan did not allocate financial resources to the measurement of means of verification, stipulating that these resources would be estimated during the preparation and approval of AWPs. The M&E plan included in the ProDoc was supposed to be discussed and improved during the inception workshop but, as indicated earlier, the workshop did not take place. M&E activities in the ProDoc were defined as follows:

- Inception workshop and report (estimated budget USD 15,000);
- Measurement of means of verification (budget to the be estimated in AWPs);
- Annual review reports (ARRs)/ PIR reports (no cost);
- Project Board meetings (USD 20,000);
- Periodic status/progress reports (no cost);
- Mid-term review (USD 20,000);
- Terminal evaluation (USD 30,000);
- Project terminal report (no cost);
- Annual financial audit (USD 5,000/year); and,
- Site visits (costs covered by GEF agency fee).

Implementation. During implementation, the project team prepared PIRs in 2018, 2019, 2020, and 2021. The project did not prepare annual progress reports (APRs) since it used UNDP's harmonized format for both APR and PIRs.[34] Quarterly progress reports (QPRs) were not produced either even though those were expected as part of the project's M&E plan. The MTR had been scheduled for the second semester of 2018, but it was conducted during March – June 2019, and finalized on 14 June 2019. The MTR was delayed in response to the project's slow start. The quality of PIRs was good, presenting complete and relevant information of progress, risks, and planned activities. The reports facilitated the tracking of progress and contributed to the timely identification of potential problems during project implementation.

The lack of an inception workshop was a missed opportunity to improve the PRF and M&E plan, to clarify roles, and to gather support and buy-in from key project partners.

As described in the MTR report, the definition of the indicators and, especially, the lack of mid-term targets did not facilitate the assessment of project progress at intermediate stages. However most indicators and targets were adequate to assess results at end-of-project. Most notably, indicator (D) for the project

[34] ProDoc, p. 41.

objective ("Level of institutional capacity in Brazil for education, training and public awareness related to climate change.") was not sufficiently specific and seems to have created confusion about its interpretation and reporting. Building national capacities is an important objective of enabling activities and measuring the contribution of individual projects to these capacities should be part of the M&E plan for GEF-supported projects. Upcoming projects to support the preparation of NCs and BURs in Brazil could try to improve the approach to measuring the development of national capacities.

Ratings. The design, implementation, and overall quality of M&E practices of the project are evaluated on a six-point scale. The ratings are provided in Table 8, below. An explanation of the ratings scale is provided in Annex E.

Table 8. Evaluation ratings of monitoring and evaluation practices

Monitoring and evaluation	Rating
M&E design at entry	S
M&E Plan Implementation	S
Overall Quality of M&E	S

4.2.5. UNDP implementation/oversight and IP execution, overall project implementation/execution, coordination, and operational issues

UNDP implementation and oversight role. UNDP´s support during project preparation, appraisal and approval was adequate. No major issues that required UNDP´s intervention were identified during project implementation. The project team valued the support received from UNDP and considered that support in part responsible for the project successes. The project was implemented under the National Implementation Modality (NIM) with MCTI as the implementing partner. However, contractual agreements with consultants and suppliers were signed directly by UNDP and MCTI was not a Party to these agreements. The technical review of products and deliverables was coordinated by the project team, with input from the relevant technical areas within MCTI and other stakeholders.

Implementing partner role. The project team was efficient and effective planning and implementing project activities. The team was also proactive in seeking, establishing, and maintaining partnerships with key organizations and stakeholders. The team managed to cultivate these partnerships even during times of political and institutional change and uncertainty.

Procurement procedures were well understood by the project team, and there were no major issues implementing procurement processes. Workshops held with support from UNDP at the start of project implementation were useful to improve the understanding by the team of procurement processes and resolve doubts. Risks were monitored periodically and, other than disruptions from the global COVID19 pandemic, there were no impacts to project implementation from other risks that had been identified in the project´s risk log or not. A reorganization of the project team within MCTI resulted in some delays during the initial months of project implementation but these were overcome as soon as the new arrangements were in place.[35]

[35] PIR for 2018, p. 20.

Stakeholders from partner organizations interviewed for this evaluation praised the competence, efficiency, and good disposition of the project team, emphasizing their excellent problem solving and communications skills.

Ratings. The roles of UNDP and the implementing partner in project implementation are evaluated on a six-point scale. The ratings are provided in Table 9, below. An explanation of the ratings scale is provided in Annex E.

Table 9. Evaluation ratings of project implementation and oversight

Project implementation and oversight	Rating
Quality of UNDP Implementation/Oversight	S
Quality of Implementing Partner Execution	HS
Overall quality of Implementation/Oversight and Execution	S

4.2.6. Risk management

The project's risk log had registered three risks related to: (i) coordination with stakeholders, (ii) recruitment of qualified personnel, and (iii) political support to project activities. The risks in the project´s risk log were monitored, updated, and reported periodically in PIRs. Emerging risks related to the timing for the validation of results for 4NC and BURs were identified and recorded in the PIR for 2019. The risks from the global COVID-19 pandemic and from the devaluation of the Brazilian Real were recorded in the risk management section of the PIR for 2020. No issues related to safeguards were identified during project design or implementation, and no risks related to safeguards were identified and recorded in the project's risk log.

The proposed management responses to risks identified during project design and implementation seem effective. The first two risks listed in the ProDoc did not have a significant impact on project implementation, and the implementing partner was able to very skillfully navigate the changes and uncertainty in the political landscape.

The impact from COVID-19 was significant but did not prevent the project from delivering all results in accordance with the revised schedule. The impact from the devaluation of the Brazilian Real was large, but favorable to meeting project objectives as more resources in local currency were available.

4.3. Project Results

4.3.1. Relevance

The project's immediate objective was to support the preparation of the Brazilian 4NC and BURs, thus enabling the fulfilment of the country's reporting obligations under the UNFCCC. Under the UNFCCC, non-Annex I countries receive financial support to meet these reporting obligations, and the GEF is the primary source to make this support effective. In that context, the relevance and justification for the project is demonstrated and has remained valid since project design and approval.

Beyond the fulfillment of reporting obligation under UNFCCC, NCs and BURs have a critically important role raising awareness on climate change, and informing policies and actions on climate change mitigation and adaptation. Since the project enabled the preparation and dissemination of 4NC and BURs, it has also proven its relevance to Brazil's climate change policies and priorities. As reported by stakeholders interviewed for this TE, the information included in 4NC and BURs has been used in the preparation and implementation of Brazil's NDC and NAP, and provided inputs to sectoral policies and plans (e.g. national energy plan, national plan on non-communicable diseases, State's climate change plans, etc.).

Alignment with national priorities. The project was designed to be consistent with PNMC, which was enacted by Law No. 12,187 of 2009. The objectives of PNMC are to promote sustainable development and protect the climate system, reduce GHG emissions by sources and enhance the removal by sinks, implement climate change adaptation actions, promote the conservation of natural resources, and foster the development of the carbon market in Brazil. The policy is implemented through a series of strategies and plans that are informed by the knowledge generated during the elaboration of NCs and BURs. Among others, NCs and BURs inform the implementation of Brazil's National Plan on Climate Change, National REDD+ Strategy, National Adaptation Plan (NAP), and regional and sectoral mitigation and adaptation plans (e.g. Action Plan for the Prevention and Control of Deforestation in the Legal Amazon, Action Plan for the Prevention and Control of Deforestation in the Cerrado, Sectoral Plan of Transport and Urban Mobility for Mitigation and Adaptation to Climate Change, Health Sectoral Plan for Mitigation and Adaptation to Climate Change, etc.).[36] NCs and BURs also provide the information necessary to enhance and monitor the implementation of Brazil's NDCs under the Paris Agreement.

UNDP strategic priorities. In the ProDoc, the project was aligned to the outcome on "incorporating sustainable development, green economy and decent labour paradigms into national public policies" of the 2012 – 2016 United Nations Development Assistance Framework (UNDAF).[37] The project was also in line with the current UNDAF (2017 – 2021), especially under outcome 3 on "strengthened institutional capacity to promote public policies for the sustainable management of natural resources and ecosystem services, and combating climate change and its adverse effects, and ensure the coherence and implementation of these policies".[38] The project was also in line with outcome 1 of UNDP's Strategic Plan (2014 – 2017) defined as "growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded"[39] and with first outcome of UNDP Country Programme with Brazil (2012 – 2016) on "capacities for integrating sustainable development and productive inclusion for poverty reduction". The project continued to be relevant to UNDP's current Country Programme (2017 – 2021) under UNDAF's outcome 3 (see above) and contributing to its output 1 on "policies strengthened for the adoption, implementation, and monitoring of mitigation and adaptation measures to climate change, mainstreaming and integrating national plans and international agreements".[40]

GEF focal area. The project was aligned and contributed to the GEF-5 climate change focal area, specifically under objectives 6, on support to enabling activities under UNFCCC.

Sustainable Development Goals. The ProDoc did not discuss the project's contribution to SDGs. However, the project´s design and results were in fact aligned to Agenda 2030, and contributed to several SDGs, especially:

SDG 7. Affordable and clean energy

SDG 9. Industry, innovation and infrastructure

SDG 11. Sustainable cities and communities

[36] 4NC, pp. 70 - 71.
[37] ProDoc, p. 1.
[38] United Nations. United Nations Sustainable Development Partnership Framework. Brazil, 2017 – 2021. 2016. pp. 25 – 28.
[39] UNDP. Changing the World. UNDP Strategic Plan: 2014 – 2017. No date.
[40] UNDP Country Programme Document (CPD) for Brazil (2017 – 2021). 2016. p. 12.

SDG 12. Responsible consumption and production

SDG 13. Climate action

SDG14. Life below water

SDG 15. Life on land

4.3.2. Effectiveness

The evaluation of the achievement of results at the outcome and output level is based on the PRF. This section presents a detailed description of the outcomes and outputs delivered under each project component, as defined in the PRF. Figure 3, overleaf, presents a map of the project´s outcomes and outputs to facilitate the review this section.

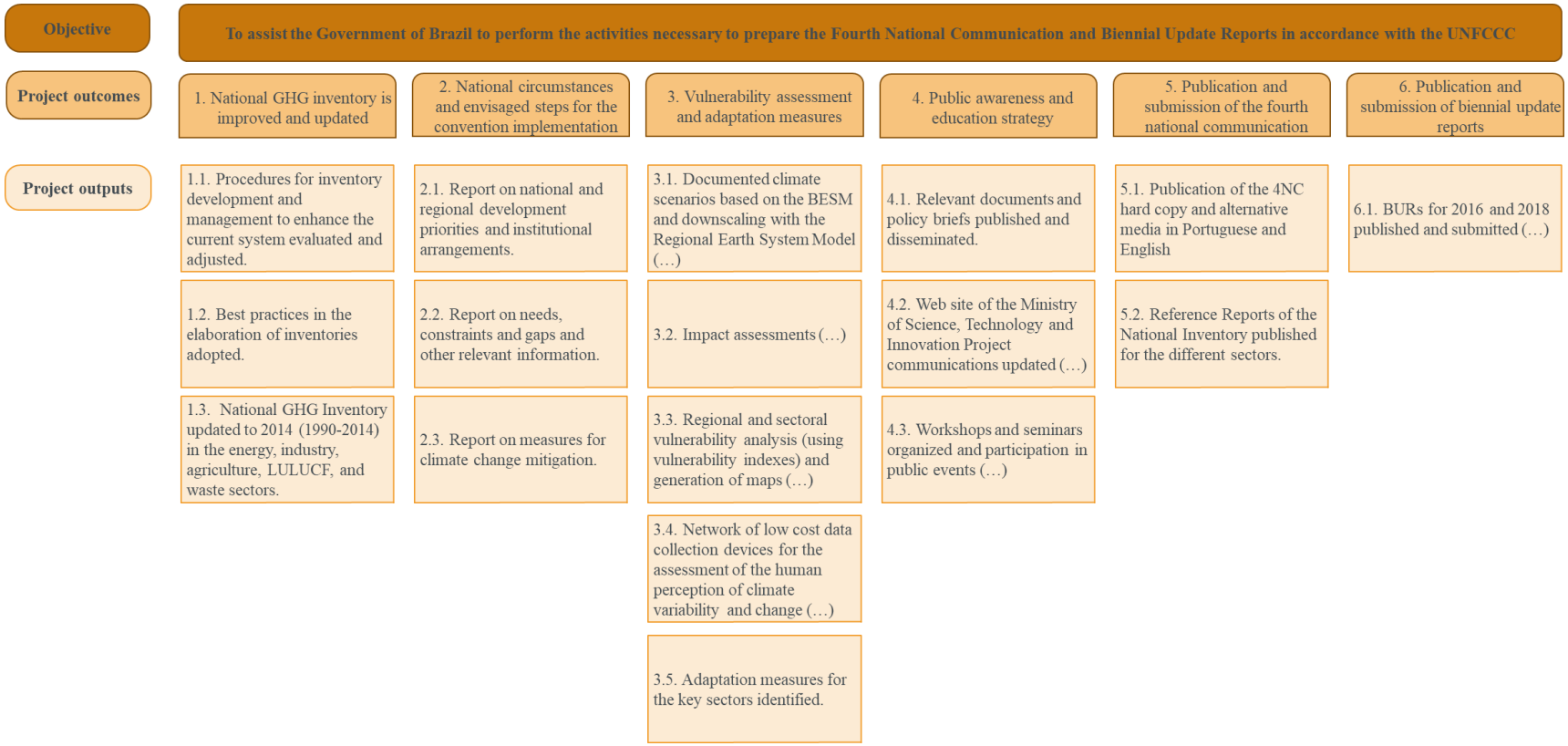


Figure 3. Map of project outcomes and outputs

Project objective

Table 10 lists the indicators and targets defined in the PRF at the objective level and provides the status of the indicators at end-of-project. All targets set for indicators at end-of-project were met, moreover, the targets for indicators (A) and (E) were exceeded. As discussed in section 4.2.4, indicator (D) was not sufficiently specific and created some confusion during project implementation.

Table 10. Project objective targets and indicators at end of project

Objective indicator and target by end of project	Reported objective indicators at end of project
Indicator (A) Status of national GHG inventories **Baseline**: TNC GHG inventory available for period 1990-1994 (INC), 1990-2000 (SNC) and 1990-2010 (TNC) **Target**: 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	The GHG inventory for the period 1990-2016 was completed, reviewed by experts, and validated by the Government of Brazil in 2020. The inventory covers the following sectors/sources: (i) energy; (ii) industrial processes and product use (IPPU); (iii) agriculture; (iv) LULUCF; and, (v) waste.[41] The data series covers to additional years (2015-2016) to those originally planned for (1990-2014).
Indicator (B) Status of assessment National Circumstances **Baseline**: TNC includes assessment of National circumstances until 2013 **Target**: Report on National Circumstances and description of steps taken or envisaged for the Convention implementation regarding the period 2014 to 2017	The assessment of national circumstances was completed, reviewed by experts, and validated by the Government of Brazil in 2019 and 2020. The information produced was compiled and included in chapters 1, 4 and 5 of 4NC.[42]
Indicator (C) Publication of Fourth National Communication **Baseline**: TNC published in December 2014 **Target**: 4th National Communication fully prepared and published	Brazil submitted the 4NC to the UNFCCC secretariat on 31 December 2020. The document is available on the UNFCCC website under <https://unfccc.int/documents/267657>.
Indicator (D) Level of institutional capacity in Brazil for education, training and public awareness related to climate change **Baseline**: Fragmented initiatives on education, training and public awareness **Target**: At least one research group supporting education, training and public awareness initiatives	The project developed and implemented a communication plan to disseminate the results from the elaboration of 4NC. As part of the plan, the project prepared educational materials and held regional events to raise awareness. An informal group with representatives from MCTI and partner universities was established in 2021. In the context of this informal group, the project has commissioned the elaboration of education

[41] PIR for 2021 p. 5; 4NC, Chapter 2; GHG Inventory 1990 – 2016 (Excel).
[42] PIR for 2021 p. 8; 4NC.

	products, including materials for teachers and school children (e.g. books, games, etc.).
Indicator (E) Biennial Update Report for reference year 2012 and 2014 **Baseline**: First BUR (submitted with TNC) **Target**: BUR (submitted on 2016) and BUR (2018 submitted with FNC)	Brazil submitted the second BUR (BUR 2) on 3 March 2017 and the third BUR (BUR 3)on 22 July 2020. Moreover, with support from the project, Brazil also submitted the fourth BUR (BUR 4)on 31 December 2020.[43] The reports are available on the UNFCCC website under: BUR 2 <https://unfccc.int/documents/180612> BUR 3 <https://unfccc.int/documents/193513> BUR 4 <https://unfccc.int/documents/267661>

Outcome 1. National GHG Inventory is improved and updated

Table 11 provides and overview of the indicators for outcome 1 and a summary of the level of achievement by end-of-project. The paragraphs below discuss the delivery of project outputs under this outcome. All targets set for indicators under outcome 1 at end-of-project were achieved.

Table 11. Outcome 1 targets and indicators at end of project

Outcome indicator and target by end of project	Reported outcome indicators at end of project
Indicator (A) Database of emission factors and activity data **Baseline**: Pilot database available under the SNC and TNC **Target**: Procedures for inventory development and management to enhance the current system evaluated and adjusted	The structure and management procedures of the database that supports the preparation of GHG inventories in Brazil were reviewed, updated and completed.[44] Relevant information on GHG emissions and emissions factors is publicly available on the website of the National Emissions Registration System (SIRENE): <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene>
Indicator (B) QA/QC plan for GHG emission data per sector **Baseline**: QA/QC pilot has been designed and implemented under SNC and TNC **Target**: Best practices in the elaboration of inventories adopted	The quality assurance (QA) and quality control (QC) practices adopted for the elaboration of the GHG inventory followed the 2006 IPCC Guidelines for National Greenhouse Inventories. As part of QC practices, activity data, parameters, emissions factors, and calculations were reviewed and validated by a team of experts. Practices on QA included public consultations of technical reports to invite the review by independent experts.[45]

[43] UNFCCC website: < https://unfccc.int/BURs>. Accessed 13 September 2021,
[44] PIR for 2019, p. 10.
[45] 4NC; PIR for 2019 pp. 11-12; PIR for 2021 pp. 13-14.

Indicator (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 **Baseline**: GHG inventory available for period 1990-1994 (INC), 1990-2000 (SNC) and 1990-2010 (TNC) **Target**: GHG inventory available for the period 2011-2014, including refinement of time-series 1990-2010.	The GHG inventory for the period 1990-2016 was completed, reviewed by experts, and validated by the Government of Brazil in 2020. The inventory covers the following sectors/sources: (i) energy; (ii) IPPU; (iii) agriculture; (iv) LULUCF; and, (v) waste.[46]

Achievements

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

The project facilitated activities to improve the structure and procedures for the management of the database used for the preparation of GHG inventories in Brazil. SIRENE was revised and improved, taking into consideration the results from a technical survey to identify and prioritize the improvements to the database and data collection procedures.[47] The project could effectively mobilize key stakeholders, including members of Rede CLIMA, to provide inputs to the revised procedures. For the first time, the preparation of the Brazilian GHG inventory followed the IPCC 2006 guidelines for national GHG inventories without major deviations. The adherence to the IPCC guidelines has improved the accuracy and transparency of national inventories in Brazil.[48] Stakeholders interviewed for this terminal evaluation consider this a major achievement by the project and a positive, long-term contribution to improving climate change action and reporting in Brazil.

Details on the procedures and inputs for the elaboration of GHG inventories are published on the SIRENE website, under <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene>.[49]

Output 1.2. Best practices in the elaboration of inventories adopted.

For the first time in Brazil, the update to the GHG inventory followed the "2006 IPCC Guidelines for National Greenhouse Inventories" in its entirety, without major deviations. Stakeholders interviewed for this evaluation considered this a major project achievement, since earlier inventories had only partially followed these guidelines. Interviewees also highlighted that the inventory used Tier 1, 2 and 3 methods to estimate GHG and attained meaningful improvements to the accuracy of the calculation of various categories including, for example, composting, enteric fermentation of bovines, fugitive emissions for coal mining, land-use change, manure management, waste burning, and others. Stakeholders also reported significant improvements detailing and streamlining categories of sources and aligning the categories in the GHG inventory to those in IPCC guidelines. These detailed and standardized categories improve the quality and transparency of the GHG inventory and make comparisons between countries easier.[50]

[46] PIR for 2021 pp. 14-15; 4NC, Chapter 2; GHG Inventory 1990 – 2016 (Excel).
[47] PIR for 2018, p. 7.
[48] PIR for 2021 pp. 36-41.
[49] PIR for 2021 p. 35. SIRENE website: <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene>. Accessed 22 September 2021
[50] Interviews with project stakeholders.

The QA/QC practices adopted for the elaboration of the GHG inventory followed the 2006 IPCC Guidelines for National Greenhouse Inventories. As part of the process to improve QA/QC procedures, in 2017 and 2018, the project team facilitated two workshops and technical meetings with stakeholders to gather and discuss inputs on the methodologies and practices to be adopted to improve the quality of the GHG inventory.[51] As part of QC practices, activity data, parameters, emissions factors, and calculations were reviewed and validated by a team of experts. Practices on QA included the review by independent experts and public consultations.[52]

Information on the GHG inventory was disaggregated by State and a separate report was published providing these details.[53] Stakeholders interviewed for this evaluation confirmed that providing information by State is a meaningful improvement over earlier GHG inventories, allowing States to compare and cross-check the information they produced independently from the national GHG inventory.[54]

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

The series for the GHG inventory were revised, updated, and completed for the period 1990 – 2016 (two additional years to those originally planned). The update of the GHG inventory was undertaken with the active participation of organizations affiliated to Rede CLIMA (e.g. EMBRAPA, COPPETEC Foundation, Federal Institute of Alagoas (IFAL, for its acronym in Portuguese), Federal University of Rio de Janeiro (UFRJ, for its acronym in Portuguese), Fundação Eliseu Alves, and University of Brasilia (UnB, for its acronym in Portuguese)) and inputs from numerous researchers and experts.[55]

In addition to bilateral meetings with key Ministries during 2017 – 2020, the activities for the preparation and validation of the GHG Inventory included three workshops:

- First technical workshop, 20 October 2017, 39 participants;
- Second technical workshop, 9 April 2019), 23 participants; and,
- Third technical workshop, 27 November 2019, 35 participants.

Results from the GHG inventory were made available to government representatives to seek their inputs from 25 November 2019 (all sectors excl. LULUCF) to 7 July 2020 (LULUCF). The information was also made available for public consultation from 13 December 2019 (all sectors excl. LULUCF) to 7 July 2020 (LULUCF).[56]

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

The following table lists the indicators for outcome 2 and the level of achievement by end-of-project. The discussion below presents project achievements by output. All targets defined for indicators under outcome 2 were achieved by end-of-project.

Table 12. Outcome 2 targets and indicators at end of project

Outcome indicator and target by end of project	Reported outcome indicators at end of project

[51] PIR for 2018, p. 7.
[52] 4NC p. 91; PIR for 2021 pp. 13-14.
[53] MCTI. Resultados do Inventário Nacional de Emissiões de Gases de Efeito Estufa por Unidade Federativa. 2021.
[54] Interviews with project stakeholders.
[55] 4NC, p. 75, PIR for 2018 p. 8, PIR for 2021 p. 15.
[56] Summary of meeting held for the preparation of 4NC and BURs.

Indicator (A) Assessment of national circumstances in Brazil **Baseline**: TNC (data until 2013) **Target**: Report on national and regional development priorities and institutional arrangements	The assessment of national circumstances was completed, reviewed by experts, and validated by the Government of Brazil in 2019 and 2020. The information produced was compiled and included in chapters 1, 4 and 5 of 4NC.[57]
Indicator (B) Assessment of constraints and needs to implement the Convention in Brazil **Baseline**: TNC (data until 2013) **Target**: Report on needs, constraints and gaps and other relevant information.	The assessment of needs for the implementation of the UNFCCC in Brazil was completed, reviewed by experts, and validated by the Government of Brazil in 2020. The relevant information was included in chapter 5 of 4NC, and in section 4 of BUR 4.[58]
Indicator (C) Identification of activities and CC measures to implement the Convention in Brazil **Baseline**: TNC (data until 2013) **Target**: Report on measures for climate change mitigation.	The identification of climate change mitigation measures was completed, reviewed by experts, and validated by the Government of Brazil in 2020. The relevant information was included in chapter 4 of 4NC, and in section 3 of BUR 4.[59]

Achievements

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

Two main reports were produced under output 2.1. with support from two consultants. A first report focused on national circumstances and proposed actions for the implementation of UNFCCC. A second report described the institutional arrangements, including related initiatives, for meeting the objectives of the Convention in Brazil. In 2019, the reports were reviewed by experts affiliated to Rede CLIMA, and validated by the Government of Brazil.[60] The information contained in the reports was integrated into chapters 1 (i.e. national circumstances), and 5 (i.e. other relevant information) of 4NC.[61]

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

The assessment of needs, constraints, and gaps for the implementation of the UNFCCC in Brazil was prepared by a team of three consultants, with input from government officials and experts of institutions affiliated to Rede CLIMA. The report was finalized in 2019, reviewed by experts, and validated by the Government of Brazil in 2020. The relevant information was included in chapter 5 of 4NC, and in section 4 of BUR 4.[62]

The report was provided to government representatives to seek inputs from 3 June to 7 July 2019, and to the public from 17 June to 7 July 2019.[63]

[57] 4NC; PIR for 2021 p. 8.
[58] 4NC, Chapter 5.3; BUR 4, Section 4; PIR for 2021 p. 17.
[59] 4NC, Chapter 4; BUR 4, Section 3; PIR for 2021 p. 18.
[60] Project reports under the outcome 2, on national circumstances and proposed steps; PIR for 2019 pp. 14 – 15.
[61] 4NC, Chapters 1 and 5.
[62] 4NC, Chapter 5.3; BUR 4, Section 4; PIR for 2021 p. 17.
[63] Summary of meeting held for the preparation of 4NC and BURs.

As a follow-up activity to the completion of the assessment, the project disseminated the findings to raise awareness and contribute to overcoming some of gaps identified in the assessment.[64]

Output 2.3. Report on measures for climate change mitigation

Similarly to the assessment of needs, constraints and gaps, the identification of mitigation measures was facilitated by a team of three consultants, who collected inputs from government institutions and organizations affiliated to Rede CLIMA. The report on mitigation measures was completed in 2019, and the review experts and validation by the Brazilian authorities concluded in 2020. Key findings of the report were included in chapter 4 of 4NC, and in section 3 of BUR 4.[65]

As a follow-up activity, the project commissioned and completed a detailed assessment of climate change mitigation in the agriculture sector and their alignment to sectoral policies and plans. [66]

Outcome 3. Vulnerability Assessment and Adaptation Measures

Table 13 lists the indicators and targets defined in the PRF for outcome 3 and summarizes the level of achievement by end-of-project. The following paragraphs discuss the results under the five outputs defined for this outcome. With some caveats (e.g. indicators (A) and (D)), all targets set for indicators under outcome 3 at end-of-project were achieved.

Table 13. Outcome 3 targets and indicators at end of project

Outcome indicator and target by end of project	Reported outcome indicators at end of project
Indicator (A) Scenarios of "Brazilian Earth System Model (BESM)" **Baseline**: BESM developed and RESM/CPTEC model improved with higher resolution for a larger domain in the TNC **Target**: Documented climate scenarios based on the Brazilian Earth System Model (BESM) and downscaling with the RESM	No new climate scenarios based on BESM could be developed due to technical and infrastructure gaps that could not be addressed on time. Existing scenarios were updated and made available on INPE's website.[67]
Indicator (B) Climate change impact assessment for atmospheric chemistry, surface vegetation fires, and others **Baseline**: Limited CC impact assessment has been prepared under TNC **Target**: 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	Due to the prevailing technical challenges with BESM, the proposed impact assessments could not be completed using the model. However, impacts from climate change were assessed during the analysis of the four securities completed under output 3.3. (see description below). Examples of the impacts assessed include sea level rise, coastal erosion, drought, floods, landslides, wildfires, heat waves, and respiratory and vector-borne diseases (e.g. dengue).[68]

[64] PIR for 2021 p. 17.
[65] 4NC, Chapter 4; BUR 4, Section 3; PIR for 2021 p. 18.
[66] PIR for 2021 p. 18, interviews with members of the PMU.
[67] PIR for 2021 p. 18; INPE's webpage on climate change scenarios for Brazil at : <http://pclima.inpe.br/analise/> Visited on 22 September, 2021.
[68] 4NC, Section 3.2.1.; PIR for 2021 p. 20.

rainfall on river runoff variations and its impacts on ocean carbon cycles and coastal erosion	
Indicator (C) Mapping of vulnerability of key sectors and regions to climate change impacts **Baseline**: Improved data and methodologies under TNC **Target**: Regional and sectoral vulnerability analysis (using vulnerability indexes) and generation of maps, under various emission scenarios and time slices, in GIS format	The following vulnerability assessment were completed and included in chapter 3 of 4NC: • Water security; • Energy security; • Food security; and, • Socioenvironmental security.[69]
Indicator (D) Assessment of human perception on climate change **Baseline**: Independent studies on human perception on climate change **Target**: 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	Two surveys to assess the perception of climate change were commissioned and completed in 2021. The target group of the first survey was ordinary citizens of Brazil, and the target of the second was public employees at State and city governments.[70]
Indicator (E) Identification of key sectors and regions with climate change impacts Baseline: Preliminary results of studies on climate change vulnerability Target: Adaptation measures for the key sectors identified	The identification of climate change adaptation measures was completed, reviewed by experts, and validated by the Government of Brazil in 2020. The relevant information was included in chapter 3 of 4NC.[71]

Achievements

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).

New climate change scenarios based on BESM could not be developed during the implementation of the project due to technical difficulties and infrastructure gaps at INPE that could not be resolved on time. However, the project team and partner identified options to these new scenarios by updating existing scenarios using alternative models. Stakeholders interviewed for this evaluation confirmed that the alternative scenarios were appropriate for the scope of the analysis required for 4NC. Existing models were improved and contributed to the Coupled Model Intercomparison Project (CMIP5).

The models were made publicly available on INPE's webpage on climate change scenarios for Brazil at: <http://pclima.inpe.br/analise/>.

[69] 4NC, chapter 3; PIR for 2021 p. 21.
[70] Interviews with members of PMU.
[71] 4NC, Chapter 3; PIR for 2021 p. 23.

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.

The technical challenges related to BESM did not allow the proposed impact assessments to be completed as originally defined in the ProDoc. However, the approach chosen by the project for the analysis of vulnerability to climate change (see next discussion on output 3.3.) required a different set of impact assessments that were successfully completed with alternative tools. As part of the analysis of the four securities completed under output 3.3., the project completed an integrated analysis of prioritized climate-related impacts from various hazards including, inter alia, sea level rise, coastal erosion, drought, floods, landslides, wildfires, heat waves, and outbreaks of respiratory and vector-borne diseases (e.g. dengue).[72] The assessment included new parameters, such as thermal comfort, that had not been assessed in earlier NCs.[73]

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.

The approach to the analysis of vulnerability to climate change was discussed by the project team and partners early during project implementation. The approach chosen is based on the integrated analysis of environmental, economic, political, and social factors affecting the availability and sustainability of key resources: water, energy, food, and ecosystems services to sustain livelihoods (the later refer to as socioenvironmental security). The approach based on securities emphasizes the analysis of the interdependencies and synergies of various factors within, and across the selected securities. The selected integrative approach is a departure from more conventional sectoral approaches, that analysis risks factors in isolation. Stakeholders interviewed for this evaluation considered that the approach based on securities was a clear and meaningful improvement to the assessment of climate vulnerability, as compared to the approaches followed for the elaboration of earlier NCs in Brazil.[74]

Based on the integrative approach chosen, the project completed the assessment of (a) water security, (b) energy security, (c) food security; and, (d) socioenvironmental security. These assessments were led by individual consultants and the results were reviewed by experts and validated by the Government of Brazil. Results from these vulnerability assessments were made available to government representatives to seek inputs from 31 October to 5 December 2019, and to the public from 18 November to 5 December 2019.[75] A compilation of the assessments was included in chapter 3 of 4NC.

In addition to their contribution to 4NC, the security assessment completed by the project are also providing inputs to the review of Brazil´s National Adaptation Plan.[76]

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.

The approach to the activities under output 3.4. was revised during project implementation, also to accommodate the restrictions related to COVID-19. A recommendation by the MTR proposed the cancellation of these activities. However, the project team chose an approach based on two surveys to assess

[72] 4NC, Section 3.2.1.; PIR for 2021 p. 20.
[73] Interviews with project stakeholders.
[74] 4NC pp. 184-185; interviews with project stakeholders.
[75] Summary of meeting held for the preparation of 4NC and BURs.
[76] PIR for 2021 p. 41, interviews with project stakeholders.

the opinions on climate change vulnerability by two target groups: (i) general population, and (ii) public employees. The surveys were commissioned in 2021; the results of the survey to citizens had been compiled and analyzed by the time of this report, and the results of the survey to public servants were in the process of being analyzed.[77] The surveys commissioned by the project should provide a basis to assess the evolution of the perceptions regarding climate change held by different population groups in Brazil. In that context, it is important to replicate the surveys as part of the activities to prepare 5NC.

Output 3.5. Adaptation measures for the key sectors identified.

The identification of climate change adaptation measures was facilitated by a consulting team, with the participation of stakeholders. The adaptation option were defined in the context of the analysis of the four securities under output 3.3.. The options identified were reviewed and discussed by experts from organizations affiliated to Rede CLIMA, and the results were validated by the Government of Brazil. Key results from these activities were included in chapter 3 of 4NC.[78]

Outcome 4. Public Awareness and Education Strategy

The following table presents indicators and targets defined in the PRF for outcome 4. It also summarizes the project achievements under each indicator. A discussion of the results under the three outputs of outcome 4 is provided below. All the targets for indicators under outcome 3 have been achieved.

Table 14. Outcome 4 targets and indicators at end of project

Outcome indicator and target by end of project	Reported outcome indicators at end of project
Indicator (A) Assessment of policies and programs related to climate change **Baseline**: Revised National Plan of Climate Change and regional workshops realised for TNC dissemination **Target**: Relevant documents and programs/policy briefs published and disseminated	The project contributed with the translation into Portuguese of the following special reports by the Intergovernmental Panel on Climate Change (IPCC): • "Special Report on the Ocean and Cryosphere in a Changing Climate" (summary for policy-makers); • "Global Warming of 1.5°C" (summary for policy-makers) • "Climate Change and Land" (summary for policy-makers).[79] The information generated by GHG inventories was used to produce annual estimates of GHG emissions. These updates were published on the SIRENE website.[80]
Indicator (B) Updated webpage from MCTI with information on 4NC **Baseline**: The dissemination of TNC and the inventory results available on the MCTI webpage	Relevant information on climate change, including updaters to the GHG inventory, climate change scenarios, policies and plans, is publicly available on the website of SIRENE:

[77] MTR p. 24; interviews with members of the PMU.
[78] 4NC section 3.8.; PIR for 2021 p. 23.
[79] PIR for 2021 p. 24; IPCC 2018, 2019, 2019a.
[80] PIR for 2019 p. 22; interviews with members of the PMU; SIRENE website.

Target: Website of the MCTI updated with information on GHG Inventories, legislation, scientific knowledge and other climate change issues	<https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene>[81]
Indicator (C) Dissemination of results found in the preparation of National Communication **Baseline**: Workshop's undertaken to present the results of TNC **Target**: 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	Remote activities for the dissemination of 4NC were held as a substitute for events that could not be organized due to restrictions from COVID-19. Dissemination materials were produced to communicate the results from 4NC and to assist during the review and validation processes (see list under the description of output 4.3., below).[82]

Achievements

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

The project undertook the translation into Portuguese of the summary for policy-makers for three special reports by the IPCC:

- "Special Report on the Ocean and Cryosphere in a Changing Climate" (summary for policy-makers);
- "Global Warming of 1.5°C" (summary for policy-makers);
- "Climate Change and Land" (summary for policy-makers).[83]

The information contained in the GHG inventories was used to produce annual estimates of GHG emissions. These annual updates were made publicly available on the SIRENE website under: <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/estimativas-anuais-de-emissoes-gee>

All stakeholders interviewed for this evaluation confirmed that they have easy access to the information generated by the project.

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

Information on climate change, including policies and plans, GHG inventories, climate changes scenarios, and others, is made publicly available on the SIRENE website. More than 100 news items related to NCs and climate change have been published on the MCTI website and distributed through social media.[84] The project team maintains statistics of traffic to the website of SIRENE which, in July 2021, reported 653 unique visitors and 1,000 browsing sessions.[85] In 2021, as part of the communications strategy, the project team started promoting and directing traffic to the website of SIRENE, resulting in an increase from 200 to

[81] PIR for 2021 p. 25; SIRENE website.
[82] PIR for 2021 p. 26.
[83] PIR for 2021 p. 24; IPCC 2018, 2019, 2019a.
[84] Interviews with project team members.
[85] PIR for 2021 p. 24; statistics of SIRENE website.

8,000 monthly page views on the website.[86] Another website used to disseminate information generated by the project is AdaptaBrasil, which focuses on knowledge on vulnerability and adaptation.[87]

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.

Activities for the dissemination of the results from the preparation of 4NC were impacted by COVID-19. Still, the project team devised a series of remote events and produced communication materials to support the review and validation processes and to raise awareness on climate change. Some examples of dissemination materials produces by the project include:

- Publication on GHG Inventory by State: "*Resultados do Inventário Nacional de Emissões de Gases de Efeito Estufa por Unidade Federativa*". Brasilia, 2021.
- Technical brief on the update to the carbon maps for the Amazon biome;
- Technical brief on the development of land cover maps for the *Mata Atlântica* biome;
- Technical brief on approaches for the elaboration of land cover maps;
- Brochure on GHG Inventory for the agriculture sector;
- Brochure on GHG Inventory for the energy sector;
- Brochure on GHG Inventory for the IPPU category;
- Brochure on GHG Inventory for the waste sector;
- Brochure on 4NC, BURs and SIRENE;
- Brochure on the improvements to the methodologies for GHG inventories; and,
- Poster on the 4NC contents and elaboration process.[88]

Outcome 5. Publication and Submission of the Fourth National Communication

Table 15 provides and overview of the indicators for outcome 5 and a summary of the level of achievement by end-of-project. The following paragraphs discuss the achievement for the two project outputs under this outcome. All targets set for indicators under outcome 5 at end-of-project were achieved.

Table 15. Outcome 5 targets and indicators at end of project

Outcome indicator and target by end of project	Reported outcome indicators at end of project
Indicator (A) Publication of Fourth National Communication **Baseline**: Previous NCs **Target**: Publication of the 4NC in hard copy and alternative media in Portuguese and English, presented to the GoB	The 4NC was submitted to the UNFCCC secretariat in December 2020. A revised version to improve the quality of the English translation was submitted on July 2021. The Brazilian 4NC is available now on the UNFCCC website under: <https://unfccc.int/documents/267657>.[89]
Indicator (B) Publication of reference reports of the key sectors of the national GHG emissions inventory	Seventeen reference reports for the GHG inventory in all five sectors were produced and reviewed by experts and government officials (see list in the description of output 5.2., below).

[86] Interviews with project team members.
[87] AdaptaBrasil, website available under <https://adaptabrasil.mcti.gov.br/>
[88] APR for 2021 p. 26; project deliverables (see also list on Annex C).
[89] PIR for 2021 p. 28, UNFCCC website: <https://unfccc.int/documents/267657>. Accessed 13 September 2021.

Baseline: Publication of reference reports of TCN **Target**: Reference reports of the national inventory published for the different sectors	

Achievements

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

The process for the validation of the contents of 4NC by the Brazilian Government was affected by COVID-19. However, contingency plans implemented by the project team allowed for a timely submission of the national communication to the UNFCCC secretariat in December 2020. A revised version, with editorial improvements, followed in July 2021. The Brazilian 4NC is publicly available on the UNFCCC website under: <https://unfccc.int/documents/267657>.[90]

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

The project produced a total of 17 reference reports for the GHG inventory in the energy, IPPU, agriculture, LULUCF, and waste sectors/categories. The reports were reviewed and approved by experts from organizations affiliated to Rede CLIMA and by the national governments. The reports are publicly available on the SIRENA website. The following is the list of reference reports produced (for complete references of the reports see Annex C):

- Energy sector:
  - Fuel combustion. Reference approach (top-down). August 2020.
  - Fuel combustion. Sectoral approach. August 2020.
  - Fuel combustion, civil aviation. August 2020.
  - Fuel combustion, railways. August 2020.
  - Fugitive emissions from fuels, coal mining. August 2020.
  - Fugitive emissions form fuels, oil and natural gas. August 2020.
- Industrial processes and product use:
  - Mineral products, chemical industry, metal production, solvent and other products. September 2020.
  - Substitutes of ozone depleting substances. September 2020.
- Agriculture sector:
  - Summary report of sub-sectoral reference reports for the agriculture sector. November 2020.
  - Enteric fermentation. December 2020.
  - Waste management. December 2020.
  - Rice cultivation. November 2020.
  - Managed soils, lime and urea application. December 2020.
  - Burning of agricultural residues. December 2020.
- Land use, land-use change and forestry. November 2020.
- Annex to the LULUCF refence report on activity data and results of CO_2 emissions and removals. January 2021.

[90] See footnote 89.

- Waste sector. September 2020.[91]

Outcome 6. Publication and Submission of Biennial Update Reports

The following table presents indicators and targets defined in the PRF for outcome 6 and a summary of the project results by end-of-project. A short discussion of the results under the single output of outcome 6 is provided below. All the targets for indicators under outcome 6 have been achieved and exceeded since a third BUR was completed and submitted to UNFCCC.

Table 16. Outcome 6 targets and indicators at end of project

Outcome indicator and target by end of project	Reported outcome indicators at end of project
Indicator (A) Publication of Second BUR. **Baseline**: First BUR submitted with TNC **Target**: BURs for 2016 published and submitted, including updates of information	The second BUR of Brazil was submitted to the UNFCCC secretariat on 13 March 2017. The report is available on the UNFCCC website under: <https://unfccc.int/documents/180612>[92]
Indicator (B) Publication of Third BUR **Baseline**: Previous BUR **Target**: BUR for 2018 published and submitted, including updates of information	On 22 July 2020, Brazil submitted its third BUR to the UNFCCC Secretariat. The report is available under <https://unfccc.int/documents/193513>.[93] A fourth BUR was also completed with support from the project and submitted to the UNFCCC secretariat on 31 December 2020. BUR 4 is available under: <https://unfccc.int/documents/267661>[94]

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.

The project supported the elaboration, review, and validation of the second, third and fourth Brazilian BURs. The reports were submitted to the UNFCCC secretariat on 13 March 2017, 22 July 2020, and 31 December 2020, respectively. The preparation of BUR 4 was not included in the original scope of the project and therefore is an achievement that exceeded expectations.

4.3.3. Efficiency

Efficiency is a performance measure of the timeliness and cost-effectiveness of the implementation of planned activities and the delivery of outputs and outcomes. Efficiency gains can be achieved through the implementation of cost- and time-saving measures, the use of existing systems to support project implementation, securing the support from partnerships, and deploying human and financial resources wisely. Conversely, efficiency can be affected by factors including administrative and management delays, new or unfamiliar procedures, or skills gaps.

[91] PIR for 2021 p.29; see Annex C for a list with complete references to the reports.
[92] PIR for 2021 p. 30. UNFCCC website: <https://unfccc.int/documents/180612>. Accessed 13 September 2021,
[93] PIR for 2021 p. 30. UNFCCC website: <https://unfccc.int/documents/193513>. Accessed 13 September 2021,
[94] PIR for 2021 p. 30. UNFCCC website: <https://unfccc.int/documents/267661>. Accessed 13 September 2021,

Overall, the project was implemented according to schedule, albeit requiring an 18-month no-cost extension. Still, the 4NC was submitted to UNFCCC only four months after the original planned closing date. All previous NCs had been submitted by Brazil to the UNFCCC well passed the estimated deadline. The project effectively used the additional time to produce and submit to UNFCCC a third BUR (BUR 4) in December 2020, one more than the BURs originally planned.

The sequencing of project activities was appropriate and followed the design in the ProDoc. Some delays during the project's first months of implementation were due to internal reorganization at MCTI, and to the sometimes cumbersome processes required to formalize agreements with partner organizations. Other that these, there were no other major source of delay in the implementation of project activities and the delivery of project results.

Two external factors, the devaluation of the Brazilian Real and the limitations to in-person events due to the global pandemic, saved grant resources. In the first case because devaluation made more resources in local currency available and, in the second case, because social distancing precautions demanded that in-person events be replaced with remote activities, at a lower cost.

An important contribution to the overall efficiency of implementation of project activities came from partnerships with organizations affiliated to Rede CLIMA. The contribution of expertise, information, and professional networks by experts from organizations affiliated to Rede CLIMA substantially improved the efficiency of project implementation and was a determinant factor in the project success. Stakeholders interviewed for this evaluation recognized that the project team was highly skilled at maintaining ad nurturing these partnerships. Conversely, stakeholders also indicated that the participation by experts and organizations affiliated to Rede CLIMA could be improved by streamlining administrative procedures to engage these experts and organizations and by making project resources available to them earlier in the process.

4.3.4. Overall project outcome

The overall project outcome is rated on a six-point scale, based on the ratings for relevance, effectiveness, and efficiency. The ratings are provided in Table 17, below. An explanation of the ratings scale is provided in Annex E.

Table 17. Evaluation ratings of project relevance, effectiveness, efficiency, and overall outcome

Assessment of outcomes	Rating
Relevance	S
Effectiveness	S
Efficiency	S
Overall project outcome	S

4.3.5. Sustainability: financial, socio-political, institutional frameworks and governance, environmental, and overall likelihood

Sustainability refers to the likelihood that the project´s positive effects will be maintained after the project has closed, ending external funding and assistance. Sustainability is evaluated in terms of the identifiable risks that could affect the continuation of such positive effects. The risks to sustainability are assessed in four areas: (i) financial, (ii) socio-political, (iii) institutional frameworks and governance, and (iv) environmental.

Financial sustainability. The process of producing NCs, BURs, and Biennial Transparency Report (BTR) in Brazil is still dependent on external financial contributions. This remains true, despite the commitment by partner organizations, especially those affiliated to Rede CLIMA. However, since external contributions to this process are likely to remain available through GEF, the risks to financial sustainability are low. Moreover, for the immediate future the financial risk is reduced by the early start of activities for the preparation of a new, GEF-supported enabling activity project for the elaboration of the 5NC and biennial reports. Therefore, the rating for financial sustainability is likely (L).

Socio-political sustainability. Changes to the political landscape and priorities in Brazil were a risk that increased during project implementation and that had to be managed by the project team to ensure that the project objectives were met. While support to climate change action and the role of Brazil under the UNFCCC remains high within MCTI, key Ministries (e.g. Ministries of Agriculture, Livestock and Food Supply, Mines and Energy, and Foreign Affairs), and organizations affiliated Rede CLIMA, the risks to climate action and to the reporting process under UNFCCC from the shift in political priorities in Brazil remain and should be monitored and managed. As a result, the socio-political sustainability is rated as moderately likely (ML).

Institutional frameworks and governance. The process of elaborating, reviewing, and validating the different assessments that are compiled in national communications in Brazil is very much dependent on the highly skilled and specialized personnel of the PMU. These functions have not been formally incorporated as part of MCTI´s organigram, as they are funded by GEF grants.[95] Therefore, personnel turnover is a significant risk to the sustainability of project results. The Government of Brazil is currently preparing a request to GEF for an enabling activity to support the preparation of 5NC. That enabling activity may provide temporary relief to the risk of losing qualified personnel but it is not a long-term solution to this risk to sustainability. Moreover, it is likely that there will be a temporary gap between the operational closure of the current project to support 4NC and the start of the upcoming enabling activity for the preparation of 5NC. That gap implies that resources from GEF will not be available to sustain the PMU, hence increasing the risk of personnel turnover.

The expertise and information available through Rede CLIMA are very valuable assets that contribute to ensuring the sustainability of the reporting process to UNFCCC. Managing the relationships with the organizations affiliated to Rede CLIMA to ensure their continuous commitment to the tasks related to this process is critical to its sustainability. Interviews with stakeholders affiliated to Rede CLIMA provided evidence that this commitment is currently strong and likely to remain. However, similarly to the case of the PMU, activities to support NCs and BURs through Rede CLIMA are still highly dependent on grant resources from GEF and therefore add to the risks to sustainability.

In conclusion, the sustainability related to Institutional frameworks and governance is rated as moderately likely (ML).

Environmental. The reporting process to UNFCCC does not result in direct environmental benefits and the activities to produce NCs and biennial reports are not vulnerable to environmental factors. Therefore, no rating to environmental risks to sustainability is provided in this evaluation. Nevertheless, the knowledge generated by the reporting process informs policies, decisions and actions that can contribute to climate change mitigation and adaptation benefits.

Each assessed area of sustainability is individually rated on a four-point scale from unlikely (U), to likely (L). Based on the rating of individual areas, the overall likelihood of sustainability is ranked on the same

[95] 4NC, p. 73; interviews with members of the PMU and project stakeholders.

four-point scale. The ratings are provided in Table 18Table 17, below. An explanation of the ratings scale is provided in Annex E.

Table 18. Evaluation ratings of sustainability

Assessment of sustainability	Rating
Financial	**L**
Socio-political	**ML**
Institutional frameworks and governance	**ML**
Environmental	**Not assessed**
Overall likelihood	**L**

4.3.6. Country ownership

The project supported the fulfillment of Brazil's reporting commitments under UNFCCC. It built on and gave continuity to the activities that produced Brazil's INC, SNC, and TNC. The Government of Brazil participated in the design of the project, approved the use of resources from their GEF STAR allocation, and contributed substantial co-financing resources. The government, through MCTI, led the implementation of project activities, mobilizing resources and expertise from hundreds of national experts at line Ministries, government agencies, universities, and research organizations. MCTI hosted a PMU within the General Coordination of Climate Science and Sustainability (CGCL) and provided technical and administrative support the project team. Since the publication of 4NC, MCTI has actively disseminated the results from project activities. The Government of Brazil is already working with UNDP and GEF to mobilize resources for preparation of the upcoming 5NC, BURs, BTRs. This evaluation concludes that there is evidence of the strong support and ownership by the Government of Brazil of the reporting process to UNFCCC.

4.3.7. Gender equality and women's empowerment

The project did not have a strong focus on gender equality. The CEO endorsement request indicated that gender considerations would be included in capacity building activities, in the analysis of adaptation measures and during the elaboration of climate change scenarios. There is evidence that the project team tried to take actions to raise the relevance of gender considerations during project implementation, including by promoting the recruitment of female experts. Still, given the nature of project activities, the impact of the project on gender equality was only limited. Nevertheless, future activities on reporting to UNFCCC have an opportunity to mainstream gender considerations in climate change planning through, inter alia, the assessment of the specific vulnerability to climate change and adaptation needs of women, youth, and other vulnerable groups.

4.3.8. Cross-cutting issues

As discussed in section 4.3.1, the project made direct contributions to output one of outcome three of UNDP´s CPD for Brazil (2017 – 2021) on the strengthening of climate change policies. Additionally, the knowledge generate by the project informs policies and actions that could ultimately contribute to promote sustainable livelihoods (outcome 1/output 2), improve capacities to support social policies (outcome 1/output 3), develop policies on natural resource management (outcome 3/output 2), build partnerships on sustainable consumption and production (outcome 3/output 3), and strengthen national disaster risk management policies and capacities (outcome 3/output 5).

The project contributed to seven SDG: SDG 7. Affordable and clean energy, SDG 9. Industry, innovation and infrastructure, SDG 11. Sustainable cities and communities, SDG 12. Responsible consumption and production, SDG 13. Climate action, SDG14. Life below water, and SDG 15. Life on land.

Since no risks related to environmental and social safeguards were identified, the project had little opportunity to mainstream social and environmental priorities in the context of managing safeguards' risks.

4.3.9. GEF additionality

GEF additionally was not assessed since the project was approved before December 2018.

4.3.10. Catalytic role / replication effect

The project's catalytic role was focused on the production of science-based evidence to inform policies and actions on climate change adaptation and mitigation. In this role, the catalytic effect of the project can best be categorized as the production of a public good, as per the UNDP's guidance for terminal evaluations of UNDP-supported, GEF-financed projects.[96] This is an important role, since NCs and BURs provide the basis for the climate change action at the national level, including the enhancement and monitoring of NDCs, the implementation of national, regional, sectoral and regional climate change plans of the Brazilian Government, including the Brazilian NAP. NCs and BURs also provide inputs to sectoral policies and plans, such as the 10-year energy expansion plan[97] and the national energy plan[98].[99]

During the final months of the project in 2021, the project team has focused on the dissemination of project results at the subnational level, through a series of information events targeting audiences in subnational governments (i.e. States and municipalities), academia and NGOs. The purpose of this series of events is to disseminate the knowledge produced by the project with the objective of promoting climate change action and the subnational and local levels.[100]

4.3.11. Progress to impact

As discussed in the previous section on catalytic effect (4.3.10), the project's contribution to climate benefits (mitigation and adaptation) is based on the generation of science-based evidence to inform climate action at the national and subnational level. Even though 4NC has been recently published, there is already evidence that the knowledge generated by the project has informed the enhancement of Brazil's NDC, and the revision of both PNMC and NAP. It then seems likely that NCs will continue to play an important role informing climate change action in Brazil.

[96] UNDP. Guidance for Terminal Evaluation of UNDP-Supported, GEF-Financed Projects. 2020. p. 61.
[97] i.e. Plano Decenal de Expansão de Energia (PDE).
[98] i.e. Plano Nacional de Energia (PNE).
[99] Interviews with project stakeholders.
[100] Proposal for subnational events to presents the results from the GHG Inventory per State and vulnerability assessments per region; interviews with members of the PMU and project stakeholders.

5. Conclusions, recommendations and lessons

5.1. Conclusions

The immediate objective of the project was to support the preparation and submission to UNFCCC of Brazil´s 4NC and two BURs. This immediate objective was achieved as the 4NC was successfully submitted on 31 December 2020, BUR 2 on 3 March 2017, and BUR 3 on 22 July 2020. Moreover, the objective was exceeded given that the project could support the preparation and submission to UNFCCC of a third BUR (BUR 4), on 31 December 2020. All the main elements of 4NC were prepared and reviewed by experts, validated by the Government of Brazil, and made available for public consultation. These main elements of 4NC included a revised and updated GHG inventory for the period 1990 – 2016, an assessment of national circumstances, assessments of vulnerability to climate change, and the identification of climate change mitigation and adaptation actions.

The project was also designed to improve the approaches, methodologies, data sources and quality of the GHG inventory and vulnerability assessments. Based on the review of project deliverables and interviews with stakeholders, this evaluation concludes that the project met the expectations. The update to the GHG inventory reported in 4NC fully follows, for the first time, the "2006 IPCC Guidelines for National Greenhouse Inventories". This is an improvement to earlier inventories which only partially used these guidelines. The inventory used Tier 1, 2 and 3 methods to estimate GHG and stakeholders reported meaningful improvements to the accuracy of the calculation of various categories including, for example, enteric fermentation of bovines, manure management, and others.

The assessment of climate vulnerability followed an innovative approach based on an integrated analysis of the availability, sustainability, and fair distribution of key resources (i.e. energy, water, food, and ecosystem services[101]) that takes into consideration climate risks, political and institutional factors, and territorial/regional specificities. This approach, based on the analysis of the security of each resource and their interdependencies, is a departure from more conventional sectoral approaches to the assessment of climate vulnerability. Stakeholders interviewed for this evaluation were confident of the advantages of the chosen approach over conventional methods used in previous NCs and considered it an improvement over those.

The work on the elaboration of 4NC and BURs relied on long-standing partnerships with organizations affiliated to Rede CLIMA and other organizations. Rede CLIMA was established in 2007 to bring together experts from universities and research organizations to collaborate on the research and dissemination of climate change related knowledge, with a view to informing climate change policies and actions in Brazil. Experts from organizations affiliated to Rede CLIMA had experience working on earlier NCs and contributed their expertise, information, and professional networks. The management of these partnerships was a critical factor to the project´s success, and the role that the project team had maintaining these partnerships was deemed effective, timely, and helpful by stakeholders interviewed for this evaluation. Still, the administrative procedures to formalize the collaboration with organizations affiliated to Rede CLIMA were burdensome and time-consuming, generating delays, especially during the first months of project implementation. The complexity of these administrative procedures also affected the implementation of the project to support Brazil´s TNC, but there seem to be no readily available options to simplify them.

This evaluation concluded that the project was implemented efficiently, adhering to AWPs, achieving satisfactory disbursement rates, and without suffering major time delays. Interviews with project

[101] Referred also as "socioenvironmental security" in the NC and technical reports produced by the project.

stakeholders indicated that the project team was exceptionally skilled and effective at implementing the project activities and resolving emerging issues. In the words of an interviewee: “they were fantastic”.

Changes in the political landscape in Brazil presented the project with additional challenges that added complexity to the execution and coordination of project activities. MCTI, with support from the project team and partners, was able to navigate this added complexity, keeping the project on track and ensuring that project results were achieved.

The project was relevant to Brazil´s PNMC and contributed to UNDP´s country programme with Brazil. The knowledge generated by the 4NC is expected to inform climate change and development policies, plans and projects at the national and subnational levels in Brazil. Stakeholders interviewed for this evaluation, including representatives of line Ministries and State governments, confirmed that the knowledge made available by the project is useful to the mission of their organizations.

The sustainability of project results is deemed likely, under the assumption that financial support from GEF to future reporting processes will continue to be available. The social and political environment in Brazil may continue to add complexity to the implementation of similar projects and it is a process that should be monitored.

5.2. Recommendations

Table 19 summarizes the recommendations that the evaluation team would like to put forward for the consideration of the project team and UNDP.

Table 19. Recommendations summary table

No.	Recommendation	Entity Responsible	Timeframe
1	Finalize project terminal report The experiences with preparation of the 4NC and BURs in Brazil are relevant to future reporting to UNFCCC in Brazil, and for reporting by other non-Annex I Parties, including countries in Latin America and the Caribbean. The improvements to the approaches, methodologies, and emissions factors used for the elaboration of the GHG inventory are notable, as is the approach on water, food, energy and socioeconomic securities that was chosen for the assessment of vulnerability to climate change. The institutional arrangements for the elaboration of NCs, based on long-term partnerships with organizations affiliated to Rede CLIMA is also worth showcasing. Therefore, this evaluation recommends that the project team finalizes a project terminal report that provides a critical review of the project experiences, emphasizing on lessons learned, and opportunities for improvement by subsequent replication initiatives. The completion report could be professionally translated into English and/or Spanish and be widely disseminated, with support from UNDP.	Project team, supported by UNDP	Before project closure
2	Design of upcoming project to support reporting to UNFCCC Brazil has started the process to request financial support from GEF for the preparation of the Fifth National Communication	UNDP	2021

	(5NC), and upcoming BURs and Biennial Transparency Reports (BTRs). In that context, the following recommendations could be taken into consideration for the design of that project: • Stakeholders´ analysis and engagement plan. A key factor contributing to the success of the project for the elaboration of 4NC were the partnerships with organizations affiliated to Rede CLIMA and other stakeholders, and how effectively these partnerships were managed by the project team. To replicate and further improve this experience in the upcoming project, the project design may be supported by a stakeholders´ analysis and engagement plan prepared during the project formulation or early implementation stages. • Engage earlier with State and subnational actors. During the preparation of 4NC, State governments and subnational actors were consulted and informed of project products (e.g. GHG inventory, vulnerability assessment, etc.), but had limited roles during earlier phases of design and elaboration of those products. During the preparation of 5NC, stakeholders may want to consider engaging with State and subnational actor at earlier stages to further improve the relevance and ownership of project results at regional and local levels. • Build on the diversity of project partners. The number and diversity of actors who participated in the elaboration of 4NC was remarkable (over 450 experts representing close to 220 organizations). That level of engagement is a key asset of the UNFCCC reporting process in Brazil. Project partners for the elaboration of 5NC are encouraged to build on that asset by increasing the diversity of organizations that participate in the process by, for example, reaching out to underrepresented regions, and sectors. • Gender analysis and action plan. Gender-dimensions were not fully incorporated in the project design -it was not a requirement at the time- and had a limited scope during project implementation. It is recommended to address this shortcoming during the preparation of the project to support 5NC by, inter alia, the elaboration of a gender analysis and action plan that defines gender-responsive actions and indicators. • Communications. The communication's function was formally incorporated into project management towards the end of project implementation, in 2020, with the incorporation of a communications analyst and the adoption of a communication plan. It is recommended to include the communication's function in the design of the project to support 5NC and as soon as the project starts implementation. As part of these activities, the project may want to replicate to surveys on public perceptions of climate chance completed under output 3.4. of the project to support 4NC.		

	• Project results framework. The indicators and targets in the PRF had limited use at intermediate stages of project implementation. To improve the usefulness of the PRF as a project management tool, the recommendation made in the MTR report could be revisited to include in the PRF a combination of results and process indicators with relevant targets at mid-term.		

5.3. Lessons learned

The project to support the preparation of 4NC and BURs generated experiences and lessons that are relevant for future enabling activities to support the reporting to UNFCCC by Brazil and other developing countries. Some of the lessons learned from the project include the following:

1. The expertise, information, and professional networks available through experts and organizations affiliated to Rede CLIMA is a critically important asset to meet Brazil's reporting commitments under UNFCCC. These organizations and experts are skilled and committed to the mission of producing science-based evidence to support climate action. The number and diversity of organizations and experts who participate in the preparation of NCs in Brazil is notable. Still, there is an opportunity to build on this asset and expand the scope and diversity of stakeholders contributing to NCs. On the one hand, there is an opportunity to engage with universities and research organizations that have not had leading roles in the elaboration of earlier NCs, but that have specific sectoral or regional expertise to contribute to future reporting processes. On the other hand, the role on climate change action and the levels of expertise of States and municipal authorities have evolved and these actors could have a more active participation in the elaboration of NCs. The engagement with subnational governments may follow an incremental approach, with initial pilots during the preparation of 5NC that focus on specific topics and regions which could benefit from early inputs by subnational actors.

2. In Brazil, the process to report to UNFCCC is technically sound, supported by science, and by committed experts and organizations. However, the process is largely dependent on the availability of external financial resources from GEF, which makes the process vulnerable and limits the options available to plan and implement reporting-related activities. Most notably, the dependency on resources from GEF prevents the continuity of monitoring, research and reporting activities, as these must start and stop depending on the availability of these resources. These limitations affect experts and organizations affiliated to Rede CLIMA and, most critically, the operation of the PMU at MCTI. With increased reporting demands under the Paris Agreement and its enhanced transparency framework, risks from a vulnerable reporting process will become increasingly relevant. Case in point: the submission of Brazil´s BUR 5 is scheduled for December 2022, but financial support from GEF will be interrupted in December 2021, as the current project closes. As the project to support 5NC (and BUR 5) is under preparation, the timely delivery of BUR 5 is currently uncertain.

3. Support to the reporting process in Brazil has progressively developed the in-country capacities to generate, analyze, review, and validate the information in NCs and BURs. The capacities developed include methodologies, processes, systems, partnerships, and highly skilled

individuals. However, the process itself to develop these capacities has not been systematic and there is neither a diagnosis, nor metrics to assess the status of these capacities. The lack of a systematic approach to capacity development is especially relevant in the context of the vulnerabilities discussed in the previous paragraph. The upcoming project to support 5NC offers an opportunity to engage in a systematic process to develop capacities that focuses on identifying strengths and weaknesses, with a view to prioritizing measures to reduce the vulnerability of the process.

4. Administrative procedures to formalize partnerships are time-consuming and opportunities to streamline them are limited since they need to respond to legal requirements from the Brazilian government and participating project partners. Therefore, the actions and time required to implement these procedures should be incorporated in project design, and potential delays should be reduced by initiating these procedures at the earliest possible time. An immediate step that could be explored is to include the fiduciary role of intermediary non-for-profit organizations (i.e. public foundations) in the management arrangements of upcoming projects to support NCs and biennial reports to UNFCCC. Selecting and negotiating the participation of intermediary non-for-profit organizations during project design may reduce the time and effort invested in formalizing agreements during project implementation, clarify processes and reduce uncertainty. The role of intermediary non-for-profit organizations in the management arrangements could be that of responsible parties or a similar function that is compatible with the implementation modalities followed for the execution of enabling activities to support reporting to UNFCCC in Brazil. The functions of members of the PMU could also be reviewed, assigning responsibilities and allocating resources to the administration of partnership agreements.

5. The complexity of projects to support NCs and biennial reports in Brazil is increasing as reporting requirements under UNFCCC evolve, UNDP/GEF policies and requirements are revised, participation levels increase, and the scope, depth and thoroughness of the analysis completed for NCs continue to improve. That level of complexity is not fully reflected in project design and was evidenced by a relatively weak ProDoc that left important elements of project design to be completed during implementation (e.g. management arrangements, PRF, stakeholders' engagements, gender mainstreaming, communications strategy, etc.). The root cause for a less than optimal ProDoc is the absence of a project preparation grant (PPG) phase to provide the time and financial resources needed to address missing or weak project design elements. While it is uncommon for enabling activities to request a PPG, projects to support Brazil's reporting to UNFCCC are large and complex, use a significant fraction of the STAR resources allocated to Brazil, and are processed as full-sized projects by GEF[102]. While it is probably not feasible in the context of the upcoming project to support 5NC given that project's stage in the approval process by GEF, it is advisable to consider the possibility of requesting a PPG to GEF for projects to support reporting to UNFCCC.

[102] GEF's "Project and Program Cycle Policy" (OP/PL/01) stipulates that enabling activities with a budget above USD 1 million are processed as either medium-, or full-sized projects. The policy is available under <https://www.thegef.org/sites/default/files/documents/Project_Program_Cycle_Policy.pdf>

Annex A. Terminal evaluation terms of reference

Services/Work Description: Conduction of the Terminal Evaluation of GEF-funded Project

Project/Programme Title: BRA/16/G31 – (PIMS 5187) Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC).

Consultancy Title: Terminal Evaluation of project BRA/16/G31 – (PIMS 5187) Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC).

Duty Station: Brazil

Duration: 35 working days

Expected start date: August 10th, 2021

1. BACKGROUND

Introduction

In accordance with UNDP and GEF M&E policies and procedures, all full- and medium-sized UNDP-supported GEF-financed projects are required to undergo a Terminal Evaluation (TE) at the end of the project. This Terms of Reference (ToR) sets out the expectations for the TE of the full-sized project titled

BRA/16/G31 – (PIMS 5187) Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC) implemented by the Ministry of Science, Technology, and Innovations (MCTI) of Brazil. The project started on the 11 August 2016 and is in its final year of implementation. The TE process must follow the guidance outlined in the document 'Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects:

(http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf).

Project Background and Context

The world is currently facing the COVID-19 pandemic, which is affecting people everywhere and impacting global and local economic activity and transport systems, as well as causing unprecedented disruptions to daily life that undercut the societal fabric of opportunities for human interaction . In order to ensure the well-being and safety of UNDP's staff and contractors, as well as to ensure no harm is done to partners, communities and interlocutors, the implementation of this TE shall be undertaken virtually, as outlined in "Evaluation Approach and Method" of this TOR.

The project was designed to: 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 1990-2016, focusing on the sectors/gases that have a significant share of GHG emissions and/or present a large degree of data uncertainty. 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.

This project was approved for a duration of 48 months by the GEF, commencing in August 2016 and terminating in August 2020. Two project extensions were granted: the first one on January 16th, 2020 extending project until August 11th, 2021, and a second extension in May 2021, extending the End Date to December 11th, 2021.

The following table summarizes key project information:

Project Title:	**BRA/16/G31 – (PIMS 5187) Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC).**			
GEF Project ID:	5378		***at endorsement (Million US$)***	***at completion (Million US$)***
UNDP Project ID:	00085388	**GEF financing:**	7,528,500.00	7,528,500.00
Country:	Brazil	**IA/EA own:**		
Region:	Latin America	**Government:**	22,585,500.00	22,585,500.00
Focal Area:	Climate Change	**Other:**	150,000.00	150,000.00
FA Objectives, (OP/SP):	CCM- 6 Outcome 6.1: Adequate resources allocated to support enabling activities under the Convention	**Total co-financing:**	22,735,500.00	22,735,500.00
Executing Agency:	Ministry of Science, Technology and Innovation (MCTI)	**Total Project Cost:**	30,264,000.00	30,264,000.00
Other Partners involved:		**ProDoc Signature (date project began):**	11/08/2016	-
		(Operational) Closing Date:	Proposed: 11/08/2020	Actual: 11/12/2021

TE Purpose

The TE report will assess the achievement of project results against what was expected to be achieved and draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The TE report promotes accountability and transparency and assesses the extent of project accomplishments.

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the "Guidance for conducting terminal evaluations of UNDP-supported, GEF-Financed Projects". The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

2. SCOPE OF WORK, RESPONSIBILITIES AND DESCRIPTION OF THE PROPOSED WORK

TE Approach & Methodology

The TE report must provide evidence-based information that is credible, reliable and useful. The TE team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening Procedure/SESP) the Project Document, project reports including annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based evaluation. The TE team will review the baseline tracking tools submitted to the GEF at the CEO endorsement and the terminal tracking tools that must be completed before the TE begins.

The TE team is expected to follow a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Brazil Country Office, the Regional Technical Advisor, direct beneficiaries and other stakeholders.

Engagement of stakeholders is vital to a successful TE. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to organizations and persons listed below; executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, Project Board, project beneficiaries, academia, local government and CSOs, etc. (See Annex H).

The specific design and methodology for the TE should emerge from consultations between the TE team and the above-mentioned parties regarding what is appropriate and feasible for meeting the TE purpose and objectives and answering the evaluation questions, given limitations of budget, time and data. The TE team must use gender-responsive methodologies and tools and ensure that gender equality and women's empowerment, as well as other cross-cutting issues and SDGs are incorporated into the TE report.

The final methodological approach including interview schedule and data to be used in the evaluation must be clearly outlined in the TE Inception Report and be fully discussed and agreed between UNDP, stakeholders and the TE team. The final report must describe the full TE approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses of the methods and approach of the evaluation.

Detailed Scope of the TE

The TE will assess project performance against expectations set out in the project's Logical Framework/Results Framework (see Annex A). The TE will assess results according to the criteria outlined in the Guidance for TEs of UNDP-supported GEF-financed Projects:

(http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf).

The Results Framework provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of relevance, effectiveness, efficiency, sustainability and impact. Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary.

The Findings section of the TE report will cover the topics listed below. A full outline of the TE report's content is provided in Annex C.

The asterisk "(*)" indicates criteria for which a rating is required.

Findings

i. Project Design/Formulation
- National priorities and country driven-ness
- Theory of Change
- Gender equality and women's empowerment
- Social and Environmental Standards (Safeguards)
- Analysis of Results Framework: project logic and strategy, indicators
- Assumptions and Risks
- Lessons from other relevant projects (e.g. same focal area) incorporated into project design
- Planned stakeholder participation
- Linkages between project and other interventions within the sector
- Management arrangements

ii. Project Implementation
- Adaptive management (changes to the project design and project outputs during implementation)
- Actual stakeholder participation and partnership arrangements
- Project Finance and Co-finance
- Monitoring & Evaluation: design at entry (*), implementation (*), and overall assessment of M&E (*)

- Implementing Agency (UNDP) (*) and Executing Agency (*), overall project oversight/implementation and execution (*)
- Risk Management, including Social and Environmental Standards (Safeguards)

iii. Project Results

- Assess the achievement of outcomes against indicators by reporting on the level of progress for each objective and outcome indicator at the time of the TE and noting final achievements
- Relevance (*), Effectiveness (*), Efficiency (*) and overall project outcome (*)
- Sustainability: financial (*), socio-political (*), institutional framework and governance (*), environmental (*), overall likelihood of sustainability (*)
- Country ownership
- Gender equality and women's empowerment
- Cross-cutting issues (poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, etc., as relevant)
- GEF Additionality
- Catalytic Role / Replication Effect
- Progress to impact

Main Findings, Conclusions, Recommendations and Lessons Learned

- The TE team will include a summary of the main findings of the TE report. Findings should be presented as statements of fact that are based on analysis of the data.
- The section on conclusions will be written in light of the findings. Conclusions should be comprehensive and balanced statements that are well substantiated by evidence and logically connected to the TE findings. They should highlight the strengths, weaknesses and results of the project, respond to key evaluation questions and provide insights into the identification of and/or solutions to important problems or issues pertinent to project beneficiaries, UNDP and the GEF, including issues in relation to gender equality and women's empowerment.
- Recommendations should provide concrete, practical, feasible and targeted recommendations directed to the intended users of the evaluation about what actions to take and decisions to make. The recommendations should be specifically supported by the evidence and linked to the findings and conclusions around key questions addressed by the evaluation.
- The TE report should also include lessons that can be taken from the evaluation, including best practices in addressing issues relating to relevance, performance and success that can provide knowledge gained from the particular circumstance (programmatic and evaluation methods used, partnerships, financial leveraging, etc.) that are applicable to other GEF and UNDP interventions. When possible, the TE team should include examples of good practices in project design and implementation.
- It is important for the conclusions, recommendations and lessons learned of the TE report to incorporate gender equality and empowerment of women.

The TE report will include an Evaluation Ratings Table, as shown below:

Monitoring & Evaluation (M&E)	**Rating[103]**
M&E design at entry	
M&E Plan Implementation	
Overall Quality of M&E	
Implementation & Execution	Rating
Quality of UNDP Implementation/Oversight	
Quality of Implementing Partner Execution	

[103] Outcomes, Effectiveness, Efficiency, M&E, Implementation/Oversight & Execution, Relevance are rated on a 6-point scale: 6=Highly Satisfactory (HS), 5=Satisfactory (S), 4=Moderately Satisfactory (MS), 3=Moderately Unsatisfactory (MU), 2=Unsatisfactory (U), 1=Highly Unsatisfactory (HU). Sustainability is rated on a 4-point scale: 4=Likely (L), 3=Moderately Likely (ML), 2=Moderately Unlikely (MU), 1=Unlikely (U)

Overall quality of Implementation/Execution	
Assessment of Outcomes	Rating
Relevance	
Effectiveness	
Efficiency	
Overall Project Outcome Rating	
Sustainability	Rating
Financial resources	
Socio-political/economic	
Institutional framework and governance	
Environmental	
Overall Likelihood of Sustainability	

3. Expected Outputs and Deliverables

The TE consultant shall prepare and submit:

#	Deliverable	Description	Timing	Responsibilities
1	TE Inception Report	TE Consultant clarifies objectives, methodology and timing of the TE	No later than 2 weeks before the TE task.	TE Consultant submits Inception Report to Commissioning Unit and project management
3	Draft TE Report	Full draft report (using guidelines on report content in ToR Annex C) with annexes	Within 3 weeks of end of TE task.	TE Consultant submits to Commissioning Unit; reviewed by RTA, Project Coordinating Unit, GEF OFP
5	Final TE Report* + Audit Trail	Revised final report and TE Audit trail in which the TE details how all received comments have (and have not) been addressed in the final TE report (See template in ToR Annex H)	Within 1 week of receiving comments on draft report.	TE Consultant submits both documents to the Commissioning Unit

*The final TE report must be in English. If applicable, the Commissioning Unit may choose to arrange for a translation of the report into a language more widely shared by national stakeholders.

All final TE reports will be quality assessed by the UNDP Independent Evaluation Office (IEO). Details of the IEO's quality assessment of decentralized evaluations can be found in Section 6 of the UNDP Evaluation Guidelines.[104]

4. Institutional arrangements/reporting lines

TE Arrangements

The principal responsibility for managing the TE resides with the Commissioning Unit. The Commissioning Unit for this project's TE is the UNDP Brazil Country Office. The Commissioning Unit will contract the evaluators. The Project Team will be responsible for liaising with the TE consultant to provide all relevant documents, to include a virtual itinerary of the confirmed stakeholder interviews.

Duration of the Work

The total duration of the TE will be approximately **35 working days (wd)** over a time period of 9 weeks starting on August 10th, 2021. The tentative TE timeframe is as follows:

Timeframe	Activity
August 10, 2021	Preparation period for TE Consultant (handover of documentation)

[104] Access at: http://web.undp.org/evaluation/guideline/section-6.shtml

August 11, 2021 (4 working days)	Document review and preparation of TE Inception Report
August 17, 2021 (2 working days)	Finalization and Validation of TE Inception Report; latest start of TE task.
August 19, 2021 (10 working days)	TE task: Virtual stakeholder meetings, interviews, etc.
September 2, 2021	Task wrap-up meeting & presentation of initial findings; earliest end of TE task.
September 6, 2021 (10 working days)	Preparation of draft TE report
September 20, 2021 (5 working days)	Circulation of draft TE report for comments
September 27, 2021 (3 working days)	Incorporation of comments on draft TE report into Audit Trail & finalization of TE report
September 29, 2021	Preparation and Issuance of Management Response
October 1, 2021	Expected date of full TE completion

The expected date start date of contract is 10/08/2021.

5. Experience and qualifications

I. Academic Qualifications:

- Master's degree in Environmental Sciences, Agriculture, Engineering, Rural Development or other closely related field.

II. Years of experience:

- Minimum 10 years of relevant professional experience.
- Proven experience evaluating GEF projects.
- Relevant experience with results-based monitoring and evaluation methodologies.
- Experience applying SMART indicators and reconstructing or validating baseline scenarios.
- Technical knowledge in the targeted focal area(s).
- Experience working in the Latin America.
- Competence in adaptive management, as applied to Climate Change.
- Demonstrated understanding of issues related to gender Climate Change; experience in gender responsive evaluation and analysis.
- Excellent communication skills.
- Demonstrable analytical skills
- Project evaluation/review experiences within United Nations system
- Experience of working on GEF evaluations, especially with Climate Change/Energy.
- Experience working in Brazil.

III. Language:

- Fluency in written and spoken English.
- Working knowledge in Spanish or Portuguese, with preference for Portuguese

IV. Competencies:

Corporate:

- Demonstrates integrity and fairness, by modeling the UN/UNDP's values and ethical standards.
- Displays cultural, gender, religion, race, nationality and age sensitivity and adaptability.
- Excellent research skills; an ability to sift through large amounts of information to identify the relevant material;
- The ability to liaise with country officers and partners to collect relevant information.

Functional:

- Time management and organizational skills, with the ability to undertake multiple tasks and deliver under pressure.
- Ability to work independently and achieve quality results with limited supervision and within tight schedules.
- Ability to write in a clear and concise manner.
- Good teamwork and interpersonal skills.
- Excellent computer skills especially word processing software, and online collaboration platforms/tools.
- Demonstrates a strong capacity for innovation and creativity in providing strategic policy advice and direction.

Evaluator Ethics

The TE consultant will be held to the highest ethical standards and is required to sign a code of conduct upon acceptance of the assignment. This evaluation will be conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluation'. The evaluator must safeguard the rights and confidentiality of information providers, interviewees, and stakeholders through measures to ensure compliance with legal and other relevant codes governing collection of data and reporting on data. The evaluator must also ensure security of collected information before and after the evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the evaluation process must also be solely used for the evaluation and not for other uses without the express authorization of UNDP and partners.

6. Payment Modality

Payment to the individual contractor will be made based on the actual number of days worked, deliverables accepted and upon certification of satisfactory completion by the manager.

#	Deliverable	Payment Percentage
1	**MTR Inception Report**	20% payment upon satisfactory delivery of the final TE Inception Report and approval by the Commissioning Unit.
2	**Draft Final Report**	35% payment upon satisfactory delivery of the draft TE report to the Commissioning Unit.
3	**Final Report***	45% payment upon satisfactory delivery of the final TE report and approval by the Commissioning Unit and RTA (via signatures on the TE Report Clearance Form) and delivery of completed TE Audit Trail.

Criteria for issuing the final payment of 45%:

- The final TE report includes all requirements outlined in the TE TOR and is in accordance with the TE guidance.
- The final TE report is clearly written, logically organized, and is specific for this project (i.e. text has not been cut & pasted from other TE reports).
- The Audit Trail includes responses to and justification for each comment listed.

In line with the UNDP's financial regulations, when determined by the Commissioning Unit and/or the consultant that a deliverable or service cannot be satisfactorily completed due to the impact of COVID-19 and limitations to the TE, that deliverable or service will not be paid.

Due to the current COVID-19 situation and its implications, a partial payment may be considered if the consultant invested time towards the deliverable but was unable to complete to circumstances beyond his/her control.

7. Annexes to the TE ToR

- ToR Annex A: Project Logical/Results Framework
- ToR Annex B: Project Information Package to be reviewed by TE team
- ToR Annex C: Content of the TE report
- ToR Annex D: Evaluation Criteria Matrix template
- ToR Annex E: UNEG Code of Conduct for Evaluators
- ToR Annex F: TE Rating Scales
- ToR Annex G: TE Report Clearance Form
- ToR Annex H: TE Audit Trail
- ToR Annex I : Tracking Tool

Annex B. List of persons interviewed

Table B.1. provides a list of persons interviewed for this terminal evaluation.

Table B.1. List of persons interviewed

Name	Affiliation
Project Management Unit	
Renata GRISOLI	Energy analyst
Mauro MEIRELLES	Supervisor component on GHG inventory
Lidiane MELO	General coordinator
Danielly MOLLETA	Technical coordinator
Jussara PECCINI	Communications analyst
Diogo SANTOS	Supervisor component on vulnerability assessment
Project Steering Committee	
Juliana W. B. DOS SANTOS.	Strategic planning coordinator
UNDP	
Luana LOPES	Coordinator of the Environmentally Sustainable Development Unit, Country Office Brazil
Andrea Bosi	Project analyst, Country Office Brazil
Project stakeholders	
Luis Fernando BADANHAN	General Coordinator, Ministry of Mines and Energy
Patrick Joseph CONNERTON	Technical consultant, Department of Environmental Health, Ministry of Health
Eduardo DELGADO ASSAD	Researcher, Brazilian Agricultural Research Corporation (*Empresa Brasileira de Pesquisa Agropecuária*, EMBRAPA) - Digital Agriculture
Eleneide DOFF SOTTA	Deputy Head for Research and Development, Ministry of Agriculture, Livestock and Supply
Rodrigo FAVERO CLEMENTE	Social policy analyst, Department of Environmental Health, Ministry of Health
Stoécio Malta FERREIRA MAIA	Professor, Instituto Federal de Alagoas (IFAL)
Kátia MARZALL	Coordinator for Intelligence at the Animal and Plant Health Secretariat, Ministry of Agriculture, Livestock and Supply
Adriana Marlene MORENO PIRES	Researcher, Brazilian Agricultural Research Corporation (*Empresa Brasileira de Pesquisa Agropecuária*, EMBRAPA) - Environment
Fernanda SAMPAIO	Coordinator Agriculture and Climate Change, Secretariat of Sustainable Development of Agriculture, Ministry of Agriculture, Livestock and Supply
Samanta DELLA BELLA	Environment and Sustainabilty Secertariat. Government of Pernambuco
Josilene Ticianelli VANNUZINI FERRER	Environmental Company of the State of Sao Paulo (*Companhia Ambiental do Estado de Sao Paulo, CETESB)*
Eveline María VÁSQUEZ ARROYO	Project consultant, energy security (outcome 3)
Lucas Santiago VILELA	Social policy analyst, Department of Environmental Health, Ministry of Health

Annex C. List of documents reviewed

The following table lists the documents reviewed/consulted for this evaluation.

Table C.1. List of documents reviewed

Documents reviewed for the terminal evaluation
Project document and related information
• GEF Project Identification Form (PIF) • UNDP project document (ProDoc) – English • GEF CEO endorsement request • GEF review sheet • STAP review
Project outputs/deliverables
Outcome 1. • GHG Inventory (Excel) • Proposed improvements to GHG Inventory.
Outcome 2. • Report on national circumstances and proposed actions for the implementation of UNFCCC. • Report on institutional arrangements, including related initiatives, for meeting UNFCCC objectives in Brazil.
Outcome 3. • Reports on food security. • Reports on energy security. • Reports on water security. • Reports on socioenvironmental security.
Outcome 4. • IPCC. *Aquecimento Global de 1,5°C. Sumário para Formuladores de Políticas*. Translation into Portuguese of: IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.). World Meteorological Organization, Geneva, Switzerland. • IPCC. *Oceano e a Criosfera em um Clima em Mudança*. Sumário para Formuladores de Políticas. Translation into Portuguese of: IPCC, 2019: Summary for Policymakers. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate. H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.). • IPCC. *Mudança do clima e terra. Sumário para Formuladores de Políticas*. Translation into Portuguese of: IPCC, 2019a: Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.- O. Pörtner, D. C. Roberts, P. Zhai, R.

Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)].

- Publication GHG inventory by State: MCTI. *Resultados do Inventário Nacional de Emissiões de Gases de Efeito Estufa por Unidade Federativa.* 2021.
- Technical brief on the update to the carbon maps for the Amazon biome. No date.
- Technical brief on the development of land cover maps for the *Mata Atlântica* biome. No date.
- Technical brief on approaches for the elaboration of land cover maps. No date.
- Brochure on the GHG Inventory for the agriculture sector. No date.
- Brochure on the GHG Inventory for the energy sector. No date.
- Brochure on GHG Inventory for the IPPU category. No date.
- Brochure on GHG Inventory for the waste sector. No date.
- Brochure on 4NC, BURs and SIRENE. No date.
- Brochure on the improvements to the methodologies for GHG inventories. No date.
- Poster on the 4NC contents and elaboration process. No date.
- Statistics of SIRENE website, July 2021.

Outcome 5.

- MCTI. Fourth National Communication of Brazil to the United Nations Framework Convention on Climate Change. Brasilia, 2020. (4NC).

<u>Reference reports for the GHG inventory</u>:

- Reference report. Energy sector, fuel combustion. Reference approach (top-down). (*Relatório de Referência. Setor Energia. Subsetor Queima de Combustíveis. Abordagem de Referência (Top-Down))*. August 2020.
- Reference report. Energy sector, fuel combustion. Sectoral approach. (*Relatório de Referência. Setor Energia. Subsetor Queima de Combustíveis. Abordagem Sectorial (Top-Down))*. August 2020.
- Reference report. Energy sector, fuel combustion, civil aviation. (*Relatório de Referência. Setor Energia. Subsetor Queima de Combustíveis Fósseis. Categoria Aviação Civil)*. August o 2020.
- Reference report. Energy sector, fuel combustion, railways. (*Relatório de Referência. Setor Energia. Subsetor Queima de Combustíveis Fósseis. Categoria Transporte Rodoviário)*. August 2020.
- Reference report. Energy sector, fugitive emissions from fuels, coal mining. (*Relatório de Referência. Setor Energia. Subsetor Emissões Fugitivas. Mineração e Manejo do Carvão Mineral)*. August 2020.
- Reference report. Energy sector, fugitive emissions form fuels, oil and natural gas. (*Relatório de Referência. Setor Energia. Subsetor Emissões Fugitivas. Categoria Petróleo e Gás Natural)*. August 2020.
- Reference report. Industrial processes and product use, mineral products, chemical industry, metal production, solvent and other products. (*Relatório de Referência. Setor Processos Industriais e Uso de Produtos. Indústria Mineral, Indústria Química, Indústria Metalúrgica, Produtos não Energéticos de Combustíveis e Solventers Outros.)*. September 2020.

- Reference report. Industrial processes and product use, substitutes of ozone depleting substances. (*Relatório de Referência. Setor Processos Industriais e Uso de Produtos. Subsetor Gases Subsitutos para as Substâncias Destruidoras da Capa de Ozônio (ODS))*. September 2020.
- Summary report of sub-sectoral reference reports for the agriculture sector (*Relatório Síntese dos Relatórios de Referência Subsetoriais. Setor Agropecuária*). November 2020.
- Reference report. Agriculture sector, enteric fermentation. (*Relatório de Referência. Setor Agropecuária. Subsetor Fermentação Entérica*). December 2020.
- Reference report. Agriculture sector, waste management. (*Relatório de Referência. Setor Agropecuária. Subsetor Manejo de Dejetos*). December 2020.
- Reference report. Agriculture sector, rice cultivation. (*Relatório de Referência. Setor Agropecuária. Subsetor Cultivo de Arroz*). November 2020.
- Reference report. Agriculture sector, managed soils, lime and urea application. (*Relatório de Referência. Setor Agropecuária. Subsetores Subsetores Solos Manejados, Calagem e Aplicação de Ureia)*. December 2020.
- Reference report. Agriculture sector, burning of agricultural residues. (*Relatório de Referência. Setor Agropecuária. Subsetor Queima de Resíduos Agrícolas)*. December 2020.
- Reference report. Land use, land-use change and forestry. (*Relatório de Referência. Setor Uso da Terra, Mudança do Uso da Terra e Florestas)*. November 2020.
- Reference report (annex). Land use, land-use change and forestry, activity data and results of CO_2 emissions and removals. (*Anexo do Relatório de Referência. Setor Uso da Terra, Mudança do Uso da Terra e Florestas, Matrizes de dados de atividade e resultados de emissões e remoções de CO_2)*. January 2021.
- Reference report. Waste. (*Relatório de Referência. Setor Resíduos)*. September 2020.

Outcome 6.

- MCTI. Second Biennial Update Report of Brazil to the United Nations Framework Convention on Climate Change. Brasilia, 2017.
- MCTI. Third Biennial Update Report of Brazil to the United Nations Framework Convention on Climate Change. Brasilia, 2019.
- MCTI. Fourth Biennial Update Report of Brazil to the United Nations Framework Convention on Climate Change. Brasilia, 2020.

Project steering committee

- Minutes meeting June 2017
- Minutes meeting July 2019
- Minutes meeting September 2020

Stakeholders' engagement

- List of project staff and key stakeholders (incl. contact information)
- GHG Inventory, first technical workshop (20 October 2017). Agenda and list of participants.
- GHG Inventory, second technical workshop (9 April 2019). Minutes and list of participants.
- GHG Inventory, third technical workshop (27 November 2019). Minutes and list of participants.
- Summary of meeting held for the preparation of 4NC and BURs.

- Proposal for subnational events to presents the results from the GHG Inventory per State and vulnerability assessments per region.

Monitoring and evaluation

Project implementation review (PIR) reports**:**

- PIR for 2018.
- PIR for 2019.
- PIR for 2020.
- PIR for 2021.

Mid-term review

- Mid-term review of the project on "Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC)". June 2019.
- Management response to the Midterm Review of Brazil 4NC. July 2019.

Financials

Combined delivery reports (CDRs)

- CDR for 2016.
- CDR for 2017.
- CDR for 2018.
- CDR for 2019.
- CDR for 2020.
- CDR for 2021 (January – September).

Audit reports

- 2017 (report dated 6 Abril 2018).
- 2018 (report dated 20 March 2019).
- 2019 (report dated 27 March 2020).

Others

- UNDP, GEF. Third National Communication to the United Nations Framework on Climate Change – UNFCCC Brazil. Final Evaluation. 2016.
- UNDP. Changing the World. UNDP Strategic Plan: 2014 – 2017. No date.
- UNDP. Country programme document for Brazil (2017 2021). 2016.
- UNEP, GEF. Mitigation Options of GHG Emissions in Key Sectors in Brazil. Terminal Evaluation. 2018.
- United Nations. United Nations Sustainable Development Partnership Framework. Brazil, 2017 – 2021. 2016.
- UNDP. Guidance for Terminal Evaluation of UNDP-Supported, GEF-Financed Projects. 2020.

Annex D. Evaluation criteria matrix

The evaluation criteria matrix (Table D.1.) defines the criteria and questions addressed during the terminal evaluation. The evaluation matrix was finalized during the preparation of the terminal evaluation inception report.

Table D.1. Evaluation criteria matrix

Evaluative Criteria Questions	Indicators	Sources	Methodology
Project design			
Lessons from other projects: Did the project design incorporate lessons from other, similar projects?	Evidence of lessons from other projects in project design	ProDoc	Documents analysis
Project logic and strategy: Were project objectives clear and feasible? Were project outcomes and outputs internally coherent and consistent with the definition of the project objective?	Coherence and consistency between outputs, outcomes, and objective	ProDoc	Documents analysis
Gender responsiveness: How were gender considerations incorporated in project design?	Evidence of planned activities with considerations on gender issues Evidence of gender-disaggregated indicators	ProDoc	Documents analysis
Stakeholder participation: Was there participation from stakeholders in the project design process?	Level of participation of stakeholders in project design	ProDoc	Documents analysis Interviews
Implementation and execution			
Adaptive management			
Which changes were made to project design and plans during implementation? How were these changes implemented, documented, and reported? How did those changes impact project results?	Evidence of adequate processes to identify, approve and document changes to project design	ProDoc, PIRs, AWPs, Project communications	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
How well did the project adapt to changes in the political and institutional environments during project implementation?	Evidence of actions by the project team and partners to keep abreast of changes, adjust approaches, create and maintain partnerships, and	ProDoc, PIRs, AWPs, Project communications	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team

Evaluative Criteria Questions	Indicators	Sources	Methodology
	keep stakeholders informed		
Stakeholder participation and partnerships			
Did the project develop effective partnerships? Did these partnerships contribute to project results? How well did the project adapt to changes in partner institutions?	Evidence of continuous support to and participation in project activities by project partners	PIRs Project communications	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Project finance and cofinancing:			
Were there appropriate financial controls and mechanisms to allow effective project management?	Adequacy of financial control mechanisms Findings from auditors	Audit reports, PIRs	Documents analysis Interviews with project team
Did planned cofinancing contributions materialize? Were external resources well integrated into project strategy?	Levels of cofinancing reported	Audit reports, PIRs	Documents analysis Interviews with project team
Monitoring and evaluation (M&E)			
Does the monitoring plan have SMART indicators?	Smart indicators in PRF	ProDoc,	Documents analysis
Was the monitoring plan implemented as intended?	Project reports submitted in accordance with provisions in the monitoring plan	ProDoc, PIRs	Documents analysis Interviews with project team
Were resources allocated for M&E expended as planned?	Project budgets and expenditures conform to provisions in monitoring plan	ProDoc, PIRs	Documents analysis Interviews with project team
Implementing partner execution, UNDP oversight			
Did the IP focus on results and timeliness?	Evidence that problems were identified and analysed on time Evidence that solutions were identified and implemented effectively to respond to emerging problems Evidence that plans were adjusted and updated to respond to problems and agreed courses of action	ProDoc, PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team

Evaluative Criteria Questions	Indicators	Sources	Methodology
Was there clarity regarding responsibilities over project execution?	Evidence that plans adequately identified responsibilities and timelines Evidence that activities were implemented as planned Evidence that plans were adjusted and updated to respond to problems and agreed courses of action	ProDoc, PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Were procurement processes appropriate?	Evidence that contracts were awarded in accordance with procurement plans	AWP, procurement plans, lists of awarded contracts	Documents analysis Interviews with project team
Did the IP identify and managed risks effectively?	Risk log was kept up to date Evidence that problems were identified and analysed on time Evidence that solutions were identified and implemented effectively to respond to emerging problems Evidence that plans were adjusted and updated to respond to problems and agreed courses of action	ProDoc, PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
UNDP role: Was the support provided by UNDP timely and effective?	Oversight missions were conducted as planned Evidence that responses to emerging issues were clear and timely	PIRs, oversight missions' reports	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Assessment of project outcomes			
Relevance: How does the project relate to the main objectives of the GEF Focal area, and to the environment and development priorities a the local, regional and national level?			
Was the project relevant to national priorities, including the nationally determined contribution (NDC) under the Paris Agreement?	Consistency between project objectives/results and national development priorities	ProDoc, PIRs Published policy documents (e.g. NDC)	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
To what extent was the project aligned to GEF´s climate change focal area	Consistency between project objectives/results and GEF's strategy	ProDoc, PIRs GEF strategies and	Documents analysis

Evaluative Criteria Questions	Indicators	Sources	Methodology
strategy and operational programme?		programming directions	Semi-structured interviews with project stakeholders Interviews with project team
To what extent was the project aligned to UNDP´s strategic priorities in Brazil?	Consistency between project objectives and results and UNDP priorities in Brazil	ProDoc, PIRs UNDP Strategic Plan UNDP Country Programme Document	Documents analysis Semi-structured interviews with project stakeholders
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
Were all expected project outcomes and targets achieved?	PRF indicators	ProDoc, PIRs Press releases	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Were all procedures and databases required for the GHG inventory updated and completed as expected?	Consistency between proposed activities to update procedures and databases and actual project activities and results	ProDoc, PIRs Project reports and publications	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Were all reports and analysis on national circumstances and needs completed as expected?	Consistency between proposed activities to report on national circumstances and needs, and actual project activities and results	ProDoc, PIRs Project reports and publications	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Was the report on climate change mitigation measures completed as expected?	Consistency between proposed activities to report on climate change mitigation measures, and actual project activities and results	ProDoc, PIRs Project reports and publications	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Were all reports and analysis on vulnerability and adaptation completed as expected?	Consistency between proposed activities to report on climate change vulnerability and adaptation measures, and actual project activities and results	ProDoc, PIRs Project reports and publications	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Were project activities and results adequately disseminated?	Evidence of project activities and results being announced and published through relevant sources (e.g.	ProDoc, PIRs Project website and newsletter	Documents analysis Semi-structured interviews with project stakeholders

Evaluative Criteria Questions	Indicators	Sources	Methodology
	project website, newsletter, etc.)		Interviews with project team
Were the 4NC and BURs submitted to the UNFCCC on time?	Evidence of submission of 4NC and BURs to the UNFCCC secretariat.	UNFCCC website	Document review Interviews with project team
Are there any relevant lessons or recommendations regarding effectiveness to be codified?	Lessons and recommendations identified by stakeholders	PIRs	Documents analysis Semi-structured interviews Interviews with project team
Efficiency: Was the project implemented efficiently, in line with international and national norms and standards?			
Where project funds spent according to plans?	Consistency between project expenditures and project budget and AWPs	ProDoc, AWPs, PIRs	Documents analysis Interviews with project team
To what extent was the project implemented in a cost-effective and timely manner?	Adherence of project activities to project budget and schedules	ProDoc, AWPs, PIRs	Documents analysis Interviews with project team
Are there any relevant lessons or recommendations regarding efficiency to be codified?	Lessons and recommendations identified by stakeholders	PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Sustainability: To what extent are there financial, institutional, socio-political, and/or environmental risks to sustaining long-term project results?			
Financial: What mechanisms are available to sustain the national capacities to report to UNFCCC? Are the financial resources for these mechanisms confirmed?	Evidence of mechanisms to support reporting functions	PIRs ,	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Institutional: Are there institutional arrangements in place to support reporting functions?	Evidence of institutional arrangements to support reporting functions	PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Institutional: Are the capacities in key institutions adequate to support reporting functions?	Evidence of capacities in key institutions to support reporting functions	PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team

Evaluative Criteria Questions	Indicators	Sources	Methodology
Socio-political: Are there any social or political risks to the permanence of project outcomes?	Risks identified by stakeholders	PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Environmental: Are there any environmental risks to the permanence of project outcomes?	Risks identified by stakeholders	PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Gender equality and women's empowerment: How did the project contribute to gender equality and women's empowerment?			
How did the project contribute to gender equality and women's empowerment?	Levels of participation of women in project implementation Incorporation of gender considerations in the planning and execution of project activities	ProDoc, AWPs, PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
Impact: Are there indications that the project has contributed to, or enabled progress toward reduced environmental stress and/or improved ecological status?			
To what extent did the project contribute to building the capacities to evaluate, plan for, and report on GHG and impacts from climate change in Brazil?	Reported improvements in procedures, methodologies, and approaches to the elaboration of GHG inventories and vulnerability assessments	ProDoc, PIRs	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team
How have project results contributed to national and subnational policies and plans on climate change action?	Evidence of policies and plans being informed by the products and processes supported by the project activities.	ProDoc, PIRs, published plans and policies	Documents analysis Semi-structured interviews with project stakeholders Interviews with project team

Annex E. TE rating scales

Table E.1. Monitoring and evaluation ratings scale

Rating	Description
6 = Highly Satisfactory (HS)	There were no short comings; quality of M&E design/implementation exceeded expectations
5 = Satisfactory (S)	There were minor shortcomings; quality of M&E design/implementation met expectations
4 = Moderately Satisfactory (MS)	There were moderate shortcomings; quality of M&E design/implementation more or less met expectations
3 = Moderately Unsatisfactory (MU)	There were significant shortcomings; quality of M&E design/implementation was somewhat lower than expected
2 = Unsatisfactory (U)	There were major shortcomings; quality of M&E design/implementation was substantially lower than expected
1 = Highly Unsatisfactory (HU)	There were severe shortcomings in M&E design/implementation
Unable to Assess (UA)	The available information does not allow an assessment

Table E.2. Implementation/Oversight and Execution Ratings Scale

Rating	Description
6 = Highly Satisfactory (HS)	There were no shortcomings; quality of implementation/execution exceeded expectations
5 = Satisfactory (S)	There were no or minor shortcomings; quality of implementation/execution met expectations.
4 = Moderately Satisfactory (MS)	There were some shortcomings; quality of implementation/execution more or less met expectations.
3 = Moderately Unsatisfactory (MU)	There were significant shortcomings; quality of implementation/execution was somewhat lower than expected.
2 = Unsatisfactory (U)	There were major shortcomings; quality of implementation/execution was substantially lower than expected.
1 = Highly Unsatisfactory (HU)	There were severe shortcomings in quality of implementation/execution.
Unable to Assess (UA)	The available information does not allow an assessment of the quality of implementation and execution.

Table E.3. Outcome Ratings Scale - Relevance, Effectiveness, Efficiency

Rating	Description
6 = Highly Satisfactory (HS)	Level of outcomes achieved clearly exceeds expectations and/or there were no shortcomings

5 = Satisfactory (S)	Level of outcomes achieved was as expected and/or there were no or minor shortcomings
4 = Moderately Satisfactory (MS)	Level of outcomes achieved more or less as expected and/or there were moderate shortcomings.
3 = Moderately Unsatisfactory (MU)	Level of outcomes achieved somewhat lower than expected and/or there were significant shortcomings.
2 = Unsatisfactory (U)	Level of outcomes achieved substantially lower than expected and/or there were major shortcomings.
1 = Highly Unsatisfactory (HU)	Only a negligible level of outcomes achieved and/or there were severe shortcomings.
Unable to Assess (UA)	The available information does not allow an assessment of the level of outcome achievements.

Table E.4. Sustainability Ratings Scale

Rating	Description
4 = Likely (L)	There are little or no risks to sustainability.
3 = Moderately Likely (ML)	There are moderate risks to sustainability.
2 = Moderately Unlikely (MU)	There are significant risks to sustainability.
1 = Unlikely (U)	There are severe risks to sustainability.
Unable to Assess (UA)	Unable to assess the expected incidence and magnitude of risks to sustainability.

Annex F. Signed UNEG Code of Conduct form

UNEG Code of Conduct for Evaluators

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject. Independence

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing, or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

Evaluation Consultant Agreement Form

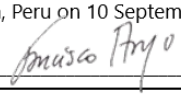
Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: Francisco Arango

Name of Consultancy Organization (where relevant): N.A.

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Lima, Peru on 10 September 2021

Signature: 

An independent evaluation reduces the potential for conflicts of interest which might arise with self-reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals, and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

Annex G. Signed TE report clearance form

TE Report Clearance Form

Terminal Evaluation Report for BRA/16/G31 - Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC) - PIMS 5187. Reviewed and Cleared By:

Commissioning Unit (M&E Focal Point)

Name: _____

Signature: _____ Date: _____

Regional Technical Advisor (Nature, Climate and Energy)

Name: _____

Signature: _____ Date: _____

Annex H. TE audit trail (in separate file)

Annex I. Terminal evaluation schedule

The schedule for the terminal evaluation took into consideration that no terminal evaluation mission was conducted. The evaluation schedule is provided in Table I.1., below.

Table I.1.Schedule for the evaluation

Milestones	Milestone
Inception report	17 September 2021
Document review	1 October 2021
Terminal evaluation draft report to UNDP for comments	15 October 2021
Revised terminal evaluation draft report submitted to project team	15 November 2021
Terminal evaluation final report	13 December 2021

Annex J. Project outcomes, outputs, and activities

Table J.1. lists the project outcomes, outputs and activities of the project as proposed in the project document.

Table J.1. Project components, outcomes, outputs and activities

Project outcomes, outputs and activities	
Outcome 1. National GHG inventory is improved and updated	
Outputs	Activities
1.1. Procedures for inventory development and management to enhance the current system evaluated and adjusted.	1.1.1. Establishment of a database for activity data, emissions factors and emissions estimates.
1.2. Best practices in the elaboration of inventories adopted.	1.2.1. Development of a Key Category Analysis.
	1.2.2. Establishment of quality control and quality assurance procedures.
	1.2.3. Uncertainty analysis.
1.3. National GHG Inventory updated to 2014 (1990-2014) in the energy, industry, agriculture, land use change and forestry, and waste sectors.	1.3.1. Inventory for the Energy Sector.
	1.3.2. Inventory for the Industry Sector.
	1.3.3. Inventory for the Agriculture Sector.
	1.3.4. Inventory for the LULUCF [sector].
	1.3.5. Inventory for the Waste Sector.
Outcome 2. National circumstances and envisaged steps for the convention implementation (Period 2014 to 2017)	
Outputs	Activities
2.1. Report on national and regional development priorities and institutional arrangements.	2.1.1. Report about the National and Regional Development Priorities.
	2.1.2. Report about Existing Institutional Arrangements Relevant to the Preparation of the Inventory on a Continuing Basis.
	2.1.3. Report on national programs containing measures to facilitate adequate climate change adaptation.
2.2. Report on needs, constraints and gaps and other relevant information.	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.
	2.2.2. Study on constraints and gaps, and related financial, technical and capacity needs in Brazil.
2.3. Report on measures for climate change mitigation.	2.3.1. Description of Steps Taken or Envisaged to Implement the UNFCCC in Brazil.
	2.3.2. Other information relevant to the implementation of the Convention in Brazil.
Outcome 3. Vulnerability assessment and adaptation measures	
Outputs	Activities
3.1. Documented climate scenarios based on the Brazilian Earth System Model (BESM)	3.1.1. Global Climate Change.
	3.1.2. Regional Earth System Model – RESM.

and downscaling with the Regional Earth System Model (RESM – former Eta-model).	
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.	3.2.1. Impact assessment of the atmospheric chemistry component, fire module and large scale climatic fluctuations of rainfall.
3.3. Regional and sectoral vulnerability analysis (using vulnerability indexes) and generation of maps, under various emission scenarios and time slices, in GIS format.	3.3.1. Analysis of the regional and sectoral vulnerability.
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.	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.
3.5. Adaptation measures for the key sectors identified.	3.5.1. Assessment of adaptation measures for key sectors.
Outcome 4. Public awareness and education strategy	
Outputs	Activities
4.1. Relevant documents and policy briefs published and disseminated.	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.
4.2. Web site of the Ministry of Science, Technology and Innovation Project communications updated with information on GHG Inventories, legislation, scientific knowledge and other climate change issues.	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
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.
Outcome 5. Publication and submission of the fourth national communication	
Outputs	Activities
5.1. Publication of the 4NC hard copy and alternative media in Portuguese and English.	5.1.1. National Inventory.
	5.1.2. Study on National Circumstances.
	5.1.3. Report on the Description of Steps Taken or Envisaged to Implement the Convention in Brazil.
5.2. Reference Reports of the National Inventory published for the different sectors.	5.2.1. Publication of the Reference Reports.
Outcome 6. Publication and submission of biennial update reports	
Outputs	Activities

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.	6.1.1. Elaboration and publication of the second BUR in 2016.
	6.1.2. Elaboration and publication of the third BUR in 2018.
Outcome 7. Project Management	
Outputs	Activities
7.1. Monitoring and evaluation program	7.1.1. Implementation of monitoring and evaluation program

Source: Adapted from UNDP Project Document pp. 48 – 59

Annex K. Project results framework

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: *Public sector and civil society institutions capacities' for policy formulation, implementation, monitoring and evaluation, focusing in particular on the most vulnerable groups, strengthened.*
Country Programme Outcome Indicators: *Strengthening of public policy institutional arrangements with focus on specialized studies and systems.*
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): *Mainstreaming environment and energy*
Applicable GEF Strategic Objective and Program: *Climate change enabling activity*
Applicable GEF Expected Outcomes: *Fourth National Communication (FNC) and Biennial Update Reports (BUR)*
Applicable GEF Outcome Indicators: *Completed and submitted Fourth National Communication (FNC) and Biennial Update Reports (BUR)*

Project strategy	**Objectively verifiable indicators**			**Source of verification/ means of gauging success**	**Risks and assumptions**
	Indicator	**Baseline**	**Target**		
OBJECTIVE: 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.	A) Status of national GHG inventories	(A) TNC GHG inventory available for period 1990-1994 (INC), 1990-2000 (SNC) and 1990-2010 (TNC)	(A) 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	**Risks**: 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. **Assumptions**: The Government maintains its support to implement the UNFCCC in Brazil.
	(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) 4th National Communication fully prepared and published		
	(D) Level of institutional capacity in Brazil for education, training and	(D) Fragmented initiatives on education, training	(D) At least one research group supporting education, training and		

Project strategy	Objectively verifiable indicators			Source of verification/ means of gauging success	Risks and assumptions
	Indicator	**Baseline**	**Target**		
	public awareness related to climate change	and public awareness	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)		
Outcome 1: National GHG inventory is improved and updated.	(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	**Risks**: (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. **Assumptions**: (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.
	(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		
Outcome 2: National circumstances, envisaged steps for the Convention	(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	**Risks**: (1) Limited political support to Climate Change

Project strategy	Objectively verifiable indicators			Source of verification/ means of gauging success	Risks and assumptions
	Indicator	**Baseline**	**Target**		
implementation, and other relevant information	(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		issues; (2) Difficulty in hiring qualified people. **Assumptions**: (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.
	(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		
Outcome 3: Vulnerability assessment and adaptation measures	(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	**Risks**: 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.
	(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		

Project strategy	Objectively verifiable indicators			Source of verification/ means of gauging success	Risks and assumptions
	Indicator	**Baseline**	**Target**		
			river runoff variations and its impacts on ocean carbon cycles and coastal erosion		**Assumptions**: The Government maintains its support to implement the UNFCCC in Brazil.
	(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		
Outcome 4: Public awareness and education strategy in place	(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)	**Risks**: Several minor risks have been identified: (1) no interest of people to access the information; (2) difficulty to involve the general public. **Assumptions**: (1) The Government
	(B) Updated webpage from MCTI with information on 4NC	(B) The dissemination of TNC and the inventory results	(B) Web site of the MCTI updated with information on GHG Inventories, legislation, scientific		

Project strategy	Objectively verifiable indicators			Source of verification/ means of gauging success	Risks and assumptions
	Indicator	**Baseline**	**Target**		
		available on the MCTI webpage	knowledge and other climate change issues		maintains its support to implement the UNFCCC in Brazil; (2) is increasing
	(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		
Outcome 5: Publication and submission of the fourth NC	(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)	**Risks**: No specific risks have been identified. **Assumptions**: (1) The Government maintains its support to implement the UNFCCC in Brazil; (2) project stakeholders correctly understand UNDP/GEF M&E principles
	(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		
Outcome 6: Preparation and submission of Biennial Update	(A) Publication of Second BUR	(A) First BUR submitted with TNC	(A) BURs for 2016 published and submitted, including updates of information	Project reports (BUR-2016 and BUR-2018 with	**Risks**: (1) Delay in compilation of GHG inventory for period

Project strategy	Objectively verifiable indicators			Source of verification/ means of gauging success	Risks and assumptions
	Indicator	Baseline	Target		
Reports (BUR) in 2016 and 2018	(B) Publication of Third BUR	(B) Previous BUR	(B) BUR for 2018 published and submitted, including updates of information	FNC, evaluation report)	1990-2012 and 1990-2014 by 2016 and 2018, respectively due to limited time. **Assumptions**: (1) Brazilian Government maintains its support to implement the UNFCCC

Annex L. Project financing

Table L.1. shows the breakdown of the project costs and expenditures across the project outcomes.

Table L.1. Project financing

	2016	2017	2018	2019	2020	2021	Subtotal	Remaining budget	Fraction remaining
Outcome 1. National GHG Inventory is improved and updated									
Annual budget (ProDoc)	-	823,875.00	823,875.00	801,125.00	801,125.00	-	3,250,000.00	382,932.30	12%
Planned expenditures (AWP)	-	207,000.00	1,248,465.93	1,776,535.47	710,381.02	437,989.30			
Actual expenditures (CDR)	2,039.20	327,206.95	816,636.71	1,248,601.91	417,525.93	55,057.00	2,867,067.70		
Fraction spent (actual/planned)	N.A.	158%	65%	70%	59%	13%			
Outcome 2. National Circumstances and Envisaged Steps for the Convention Implementation									
Annual budget (ProDoc)	-	99,000.00	88,000.00	154,000.00	99,000.00	-	440,000.00	236,923.74	54%
Planned expenditures (AWP)	-	-	158,000.00	76,957.65	82,500.00	286,804.81			
Actual expenditures (CDR)	-	-	70,406.95	48,784.84	34,003.40	49,881.07	203,076.26		
Fraction spent (actual/planned)	N.A.	N.A.	45%	63%	41%	17%			
Outcome 3. Vulnerability Assessment and Adaptation Measures									
Annual budget (ProDoc)	-	391,375.00	391,375.00	383,625.00	383,625.00	-	1,550,000.00	953,220.23	61%
Planned expenditures (AWP)	-	15,500.00	324,002.05	299,000.00	453,654.57	1,023,104.39			
Actual expenditures (CDR)	1,023.73	17,706.42	197,816.57	262,647.37	47,701.52	69,884.16	596,779.77		
Fraction spent (actual/planned)	N.A.	114%	61%	88%	11%	7%			
Outcome 4. Public Awareness And Education Strategy									
Annual budget (ProDoc)	-	182,000.00	182,000.00	168,000.00	168,000.00	-	700,000.00	412,925.66	59%
Planned expenditures (AWP)	-	3,500.00	72,250.00	99,579.39	336,286.17	487,271.74			
Actual expenditures (CDR)	-	1,961.41	72,992.73	75,513.05	62,261.07	74,346.08	287,074.34		
Fraction spent (actual/planned)	N.A.	56%	101%	76%	19%	15%			
Outcome 5. Publication and Submission of the Fourth National Communication									
Annual budget (ProDoc)	-	4,025.00	4,025.00	38,525.00	183,425.00	-	230,000.00	154,340.02	67%
Planned expenditures (AWP)	-	6,000.00	-	-	172,000.00	206,852.26			
Actual expenditures (CDR)	-	4,981.21	-	-	18,166.53	52,512.24	75,659.98		
Fraction spent (actual/planned)	N.A.	83%	N.A.	N.A.	11%				
Outcome 6. Publication and Submission of Biennial Update Reports									
Annual budget (ProDoc)	-	187,500.00	312,500.00	187,500.00	312,500.00	-	1,000,000.00	186,920.45	19%
Planned expenditures (AWP)		183,030.00	239,835.19	270,000.00	203,000.45	341,696.42			
Actual expenditures (CDR)		161,929.42	182,239.94	180,342.82	133,791.40	154,775.97	813,079.55		
Fraction spent (actual/planned)	N.A.	88%	76%	67%	66%	45%			
Project management									
Annual budget (ProDoc)	-	78,870.00	98,946.00	75,285.00	105,399.00	-	358,500.00	91,168.56	25%
Planned expenditures (AWP)		120,000.00	112,068.62	59,076.00	30,743.48	91,568.56			
Actual expenditures (CDR)	34,700.30	143,847.79	59,852.42	27,930.93	600.00	400.00	267,331.44		
Fraction spent (actual/planned)	N.A.	120%	53%	47%	2%	0%			
Total									
Annual budget (ProDoc)	-	1,766,645.00	1,900,721.00	1,808,060.00	2,053,074.00	-	7,528,500.00	2,418,430.96	32%
Planned expenditures (AWP)	-	535,030.00	2,154,621.79	2,581,148.51	1,988,565.69	2,875,287.48	-		
Actual expenditures (CDR)	37,763.23	657,633.20	1,399,945.32	1,843,820.92	714,049.85	456,856.52	5,110,069.04		
Fraction spent (actual/planned)	N.A.	123%	65%	71%	36%	16%			

Source: Combined delivery reports (CDRs) 2016 – 2021