Project evaluation series

Final evaluation of "Strengthening National Policy and Knowledge Framework in Support of Sustainable Management of Brazil's Forest Resources"

GCP/BRA/079/GFF
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The evaluation team was composed of two independent international experts: Emilia Bretan, head of the mission and expert in results evaluation and Frans Pareyn, forest expert. It was managed by Veridiana Mansour Mendes, Evaluation Officer from OED.

Acronyms and abbreviations

BFS	Brazilian Forest Service
EMBRAPA	Brazilian Agricultural Research Corporation
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GEINF	Executive Coordination on Forest Information (BFS)
ICMBio	Chico Mendes Institute for Biodiversity Conservation
NFI	National Forest Inventory
NFM&AS	National Forest Management and Assessment System
OEMA	State Environmental Organization

Executive summary

1. This evaluation summarizes the findings, conclusions and recommendations of the terminal evaluation of project GCP/BRA/079/GFF - "Strengthening the National Knowledge and Information Framework to Foster Sustainable Forest Resources Management Policies" (Project 079).
2. The Project was co-funded by the Global Environment Facility (GEF) and the Brazilian Government. It was implemented in Brazil by the Food and Agriculture Organization of the United Nations in Brazil (FAOBR), and executed by a Project Management Unit set-up within the Brazilian Forest Service (BFS), agency currently linked to the Ministry of Agriculture, Livestock and Food Supply (MAPA). Project implementation started in August 2011 and ended in June 2019.
3. This terminal evaluation assessed the Project against the following GEF evaluation criteria: i) relevance; ii) achievement of project results (effectiveness); iii) efficiency, project implementation and execution; iv) progress to impact; v) monitoring and evaluation (M&E); vi) stakeholder engagement; vii) gender; viii) capacity development; and ix) sustainability.
4. The main evaluation findings are:

   Relevance. The Project was highly relevant at the design stage, and it has remained relevant over the years. Its design and implementation addressed the national demand for a forest inventory, and counted on the participation of key stakeholders in the forest sector.

   Results. The Project helped to establish and consolidate a National Forest Inventory (NFI) model, which was approved by, and agreed with, different partners and stakeholders in the forest sector (Component 1). The strong focus given to capacity development and institutional strengthening (Component 2) and field data collection was strategic to achieve an unprecedented level of qualified knowledge on the topic.
5. There has been progress towards a National Forest Management and Assessment System (NFM&AS), but an active involvement of state governments is still necessary to ensure an operational system. However, the Project has already delivered reliable information (Component 3), e.g. forests cover and quality, volume and carbon stocks, use of forest resources (socio-environmental information) and diversity of species in the biomes.
6. The Project has also enlarged the provision of quality technical information on forest resources in the country, and has promoted an important rapprochement between the forest sector and herbariums. The availability of technical information supports sustainable forest management efforts both at national (e.g. design of internal policies) and international (e.g. compliance with international agreements) levels.
7. To date, there is some evidence on the use of NFI results for policymaking, promotion of sustainable management of forest resources, and biodiversity conservation and

monitoring initiatives (Component 4),[1] e.g. forest concessions by BFS (national level) and identification of priority areas for nature conservation in Rio de Janeiro (state level). The NFI results have also been used in international forums and documents such as FRA 2020. However, some challenges in data processing and analysis caused by public contracting bureaucracies might be preventing the upscaling of its use.

Partnerships. Strategic partnerships were established both in the preparation and implementation stages, and they were fundamental for achieving the expected outputs. These partnerships were formed through technical cooperation agreements, which was a decent approach. Co-funding states took more ownership of the process. Low engagement of some states was largely caused by internal state issues; however, the Project could have developed a long-term and continuous strategy to address this challenge.

8. **Implementation.** The maintenance of the BFS's core team throughout the implementation period was key to achieve successful results, to ensure continuity, and to preserve both the expertise and the logical flow for priority-setting. Project management has adapted well to changes, which has positively affected project implementation.
9. By guaranteeing capacity building, quality control, methodological improvements and data processing and analysis, the Project enabled the realization of other planned activities.
10. **Co-financing.** 53 percent of the planned co-financing was effective, including state resources and international funds leveraged bythe Project. Co-financing was crucial to achieve the existing results since GEF funding would not have been sufficient to allow data collection in the entire country. However, fundraising challenges and spending cuts caused by Constitutional Amendment 55 (PEC 55) limited the execution of the NFI data collection.
11. **M&E.** The M&E system implemented by the Project followed basic and traditional procedures that are common to international projects. Some recommendations provided by the mid-term evaluation (MTE) on improving the M&E system remained unattended until the end of the project, which might have affected the achievement of results.

Sustainability. BFS team, herbariums and companies involved in the data collection process have capacities and interest to continue implementing the NFI. The leadership role of the BFS and FAO was acknowledged by project partners as critical to the establishment and continuity of the NFI. Methodological and implementation adjustments would be necessary for greater efficiency.

12. Overall, NFI's medium- and long-term sustainability will depend on political priorities both at national and state levels. This dependency causes uncertainty in terms of funding, even if provided for by the law. Further demonstrations of its utility and direct application would be fundamental to maintain the NFI (main project output) in the long-term.

[1] There are still no clear advances in the productive sector or in climate change adaptation/mitigation policies and plans.

Recommendations

Recommendation 1. To FAO: In case of development/implementation of similar activities, the allocation of human and financial resources to the different components must consider the skills, roles and competencies needed to perform each type of task. This is fundamental when planning to act in different fronts such as technical information survey (field NFI), institutional articulation of different spheres and actors (federal and state institutions, research institutions, etc.) and definition of public policies (at federal and state levels).

Recommendation 2. To GEF and the Brazilian Forest Service: Given the current set of laws, future activities in the country should avoid incorporating international funds into national financial management systems or to seek legal exemption of these resources from the application of restrictive orders on the use of public funds to ensure their application in project activities.

Recommendation 3. To FAO and the Brazilian Forest Service: In order to ensure the continuity of NFI, the BFS with support from FAO should:

i. carry out strategic discussions with all states or state commissions on the implementation of the NFI as well as on the results obtained and their applicability;
ii. reassess, along with relevant sectors, the feasibility of carrying out the NFI in the country on a five-year basis and the possible impacts of its execution on a ten-year basis;
iii. qualify the selection process of providers to guarantee adequate and necessary skills and competencies, weighing technical quality against price;
iv. strengthen the original role of the NFI Quality Control.

Recommendation 4. To the Brazilian Forest Service: In order to ensure a large and comprehensive use of NFI's results, the BFS should:

i. finalize and implement the NFI data access policy as soon as possible, and implement the NFI data storage and processing system (IT system);
ii. complete the first NFI cycle in the entire country by mobilizing the available co-financing resources.

Recommendation 5. To FAO: In case of future similar activities, FAO should ensure the planning and implementation of a monitoring system with the provision of regular feedback, and the implementation of corrective measures from the beginning of the intervention.

Recommendation 6. To the Brazilian Forest Service and FAO: Carry out concrete short-term actions to demonstrate the usefulness and necessity of the NFI for federal and state governments in order to enhance the sustainable use of forest resources, and to continue guaranteeing the NFI's continuity in the country.

1. Introduction

1. This evaluation summarizes the findings, conclusions and recommendations of the terminal evaluation of project GCP/BRA/079/GFF - "Strengthening the National Knowledge and Information Framework to Foster Sustainable Forest Resources Management Policies" (Project 079). This terminal evaluation followed the evaluation guidelines of the Food and Agriculture Organization of the United Nations (FAO) and Global Environment Facility (GEF), and answered all the questions included in the Terms of Reference (TOR, Annex I).

1.1. Evaluation purpose

2. This evaluation is a requirement of GEF and also demanded by FAO for project monitoring and reporting purposes. It was conducted for both accountability and learning purposes of FAO, BFS, GEF and other participating institutions. It also documents important lessons and proposes evidence-based recommendations to guide future actions, and to inform the formulation and implementation of similar projects.

1.2. Users and audience

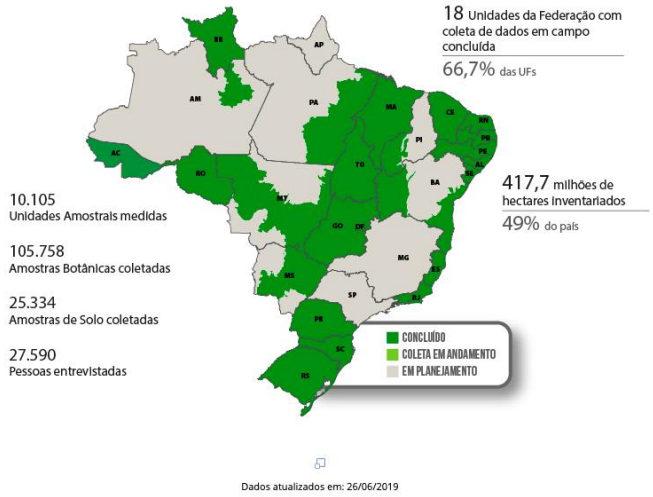
3. The primary evaluation users are:
   i. FAOBR, project management team, members of the FAO Project Task Force and direct partners (i.e. Brazilian institutions at federal and state levels involved in project implementation) who will use the findings and lessons identified to finalize project activities; plan for sustainability of results achieved; improve formulation and implementation of similar projects.
   ii. GEF, Amazon Fund and Forest Investment Program (FIP) who will use the findings to inform strategic investment decisions in the future.
   iii. Other institutions involved in project implementation who will use the evaluation findings and conclusions for future planning.
4. Additional donors, organizations and institutions interested in supporting and/or implementing similar projects could equally benefit from this evaluation report.

1.3. Objectives and scope

5. The main objectives of this terminal evaluation, as defined in the TOR, are to:
   i. examine the extent and magnitude of Project 079 outcomes and determine the likelihood of sustainability and future impacts;
   ii. synthesize lessons learned that may help in the design and implementation of similar projects.
6. The evaluation covered the entire project implementation period, from August 2011 to June 2019, with a particular focus on the period following the mid-term evaluation (MTE), i.e. from June 2015 to June 2019. In terms of geographical coverage, it covered

the five regions where the project has been – or was expected to be – implemented (Figure 1).

Figure 1: Map of the progress of NFI data collection in Brazil (updated 26 June 2019)



ONGOING COLLECTION

Source: http://www.florestal.gov.br/inventario-florestal-nadonal/132-andamento-NFI

7. As agreed upon in the project document, the terminal evaluation focuses on the same issues as the MTE, i.e. relevance, effectiveness, and progress towards the planned outcomes. Additionally, based on the GEF guidelines for terminal evaluations, the evaluation rated the following evaluation criteria in accordance with the GEF rating scheme: i) relevance; ii) achievement of project results; iii) efficiency, project implementation and execution; iv) monitoring and evaluation (M&E); v) sustainability; and vi) stakeholder engagement. Even though no rating was needed, the following criteria were also considered: vii) gender; and ix) progress to impact.
8. The evaluation also considered the preconditions and arrangements in place that have contributed to – or hindered - the adequate implementation of the planned activities, including linkages and/or partnerships between the project and other major country initiatives. The assessment of the achievement of project results also incorporates the evaluation of the Project's Theory of Change (TOC).
9. Although the terminal evaluation was not focused on the technical aspects of the Project, these naturally arose during the evaluation process, both as a result of a technical evaluation, and as suggestions and recommendations. These recommendations are found in Annex II)
10. The evaluation questions as set out in the Terms of Reference are presented in Table 1.

Table 1: Evaluation questions

Relevance	1. How relevant were the project outcomes and objectives to national and global efforts aimed at improving the sustainable management of forest resources?

	2. Was the project design adequate for delivering the expected outcomes?
Achievement of project results	3. To what extent have project outcomes and objectives been achieved, and how effective was the project in achieving them? 3.1. What were the contributing factors for the results achieved and what can be particularly attributed to FAO? 4. Did the project produce any unintended results, either positive or negative? 4.1. If so, to what extent has the project contributed to these results? Which were other contributing factors/ actors, and how did they contribute?
Efficiency, project implementation and execution	5. How did the project activities, institutional arrangements, partnerships in place and resources available contribute to, or impede, the achievement of project results and objectives? 5.1. To what extent has the management been able to adapt to changing conditions to improve the efficiency of project implementation? 5.2. To what extent did the expected co-financing occur?
Monitoring and Evaluation	6. Did the project count on a structured M&E system? Was the information from this system used to make timely decisions during project implementation?
stainability	7. To what extent has the project created ownership among counterparts and stakeholders? 8. How sustainable are the results achieved at environmental, social and financial levels?
Stakeholder engagement	9. To what extent has the project engaged stakeholders? 9.1. To what extent have the partnerships established provided complementarity and synergy to the project interventions? Have they contributed to the results achieved?
Gender	10. To what extent and how did the project include social issues (including gender) in its design? Did the project contribute to the empowerment of vulnerable groups throughout its implementation?
Progress to Impact	12. To what extent is the project likely to contribute to informed-based policymaking? 12.1. Is there any evidence of informed-based decision making on sustainable forest management that can be attributed to the project? 12.2. Are there any barriers or other risks that may prevent future progress towards this result?
Capacity development	13. Were the topics targeted by the capacity development activities based on the real needs and relevant to the sector? 14. Do the beneficiaries show enhanced capacities to collect and analyse information about forest resources?

1.4. Methodology

1.4.1. Approach

11. The evaluation adopted a qualitative approach and relied on technical analysis. It included interview with key informants and documentary review (e.g. several project documents made available by FAO, GEF and BFS, and documents available on the NFI website).

12. Interviewees were informed about the evaluation and signed informed consent forms.

For each type of informant, a specific questionnaire was developed. The content of the interviews was organized and analysed with a view to answering the evaluation questions. Principles of "Outcome Harvesting" were applied to assess the influence of the Project (e.g. use of NFI).

13. The Project logic of intervention is very comprehensive; therefore, it was difficult to identify unexpected outcomes. However, efforts were made to clearly identify which results are evidence-based and which results are still in their early stages.

1.4.2. Sample

14. Considering the country's dimensions and the limitations in time and resources, the evaluation team applied purposeful sampling strategies to represent the different biomes and regions, the various states within each biome/region, the different actors and users (e.g. technical, institutional and strategic), among others.

15. In total, the evaluation team interviewed 56 professionals involved in the NFI in the following 17 Brazilian States (and the Federal District): i) Maranhão and Pará (Amazon biome); ii) Santa Catarina, Paraná, Bahia, São Paulo and Rio de Janeiro (Atlantic Rainforest biome); iii) Pernambuco, Ceará, and Paraíba (Caatinga and Atlantic Rainforest biomes); iv) Bahia, Mato Grosso, Mato Grosso do Sul, Tocantins, Federal District, Maranhão, Goiás, and Piauí (Cerrado biome). Face-to-face interviews were conducted in the cities of Fortaleza, Rio de Janeiro, Belém, Brasília, São Paulo, João Pessoa, Recife and Curitiba, covering the five regions of the country.

16. The professionals interviewed have different profiles: managers of state environment secretariats; managers of federal and state institutions; BFS team; FAOBR project management team; curators and technicians of herbariums; managers and technicians of forest service companies; and other consultants and partners involved in the project. Representatives from organizations that are current or potential users of NFI data were also interviewed. The full list of people interviewed is found in Appendix 1.

17. At the end of the interview process, the information provided by the interviewees became repetitive (sampling closure by saturation). For this reason, the evaluation team understood that an online survey would not be necessary, since there would be little possibility of collecting new information.

1.4.3. Evaluation team

18. The evaluation team consisted of an evaluation expert with extensive experience in evaluating national and international development initiatives, and a forest expert with experience in forest inventories, natural resources management, biodiversity and land use.

1.5. Limitations

19. The continental scale of the country, as well as the specificities in each region, would require multiple and long distance displacements, which was not possible given the time and budget available. Thus, a significant proportion of interviews were conducted

via Skype or WhatsApp, which proved to be efficient without compromising the evaluation results. The team also split into some field trips according to the proximity of their states of residence to reduce travel costs.

20. Some planned interviews could not be performed due to the impossibility of the informants' agenda. In other cases, there was no response to the request for and interview despite several attempts to get in contact Even so, it was possible to guarantee a very significant representativeness.

21. Some actors interviewed weren't able to give reliable information due to large amount of time between their involvement in the Project and this evaluation. However, these were rare cases that did not influence the analysis. The contribution of these actors was more effective in the mid-term evaluation.

22. It is worth noting that some unintended factors delayed the evaluation process, i.e. long recruitment process; period of national holidays; and the recent change of government, which caused some reorganizations that directly involved key stakeholders.

1.6. Structure of the report

23. The document is structured in accordance with the GEF guidelines for terminal evaluations. It includes the evaluation scope and its methodology (Chapter 1), the presentation of Project 079 and its Theory Of Change (Chapter 2), a summary of the key evaluation findings and the answers to the evaluation questions (Chapter 3), and a final chapter with conclusions and recommendations (Chapter 4). It also includes appendices and annexes that present detailed information, in particular Annex II, which contains technical recommendations for the possible continuation of the NFI.

24. The order of evaluation dimensions was modified in Chapter 3 (as compared to the Terms of Reference, TOR) to avoid repetitions and improve the reporting. It reads as follows: i) general findings; ii) relevance; iii) monitoring and evaluation (M&E); iv) efficiency, implementation and execution; v) stakeholders engagement; vi) gender and vulnerable groups; vii) achievement of project results; viii) sustainability; and ix) progress towards impacts.

25. As defined in the Terms of Reference, this report was drafted in Portuguese and its first version was shared with national stakeholders for validation of findings, correction of possible errors, and clarifications. The second version of the report was translated into English to be shared with the GEF Coordination Unit (CGU) for comments.

2. Background and context of the project

26. Brazil has a total surface area of 8 515 767 km2, 58 percent of which is covered with forests. The Amazon Rainforest is the largest biome (73.34 percent of the forest area). Besides the Amazon, the country's forest area is composed of other biomes such as the Cerrado (a unique Savannah-type environment), the Atlantic Rainforest, the Dry Shrub Land ("Caatinga"), Southern Grasslands ("Pampa") and the Brazilian Wetlands. Native forests correspond to 485.8 million hectares; planted forests account for 10 million hectares.

27. In 2011, at the start of project implementation, the country was witnessing a significant decrease in the rate of deforestation. According to the Ministry of Environment (MMA), deforestation in the Brazilian Amazon dropped by 27 percent between August 2011 and July 2012. However, recent data shows that deforestation is again on the rise. According to a recent study released by the National Institute for Space Research in 2018, the Amazon Rainforest had lost 50 000 km2 of its area in the past seven years; in the same period, the Savannah had lost 80 000 km2.

28. The Brazilian forestry economy is expanding; from 2007 to 2012, the added value in the forest sector increased from BRL21 742 to BRL 29 411 million. In 2017, Brazil exported 22 percent of the pulp for paper and 4 percent of the wood-based panels. Forestry also generates direct and indirect jobs in the productive chain of this sector. The sustainable utilization of natural resources is a major element of rural livelihoods and economic development.

29. Harmonizing the conservation of native forests with the increasing demand for forestry products is one of the key challenges faced by countries with large forest areas. Brazil has demonstrated political will to improve forest management through the formulation and adjustment of policies and laws, and by strengthening forest-related institutions such as the Brazilian Forest Service (BFS). Moreover, Brazil has made significant efforts to engage stakeholders from different sectors and levels to promote the sustainable use and conservation of natural resources in support of economic and social development.

30. However, as defined in the Project Document, one of the main barriers to the implementation of sustainable forest management was the absence of reliable and systematized information on forestry resources at national and local levels. The Project was designed within this context to meet the needs for more informed-based policymaking as a way of enhancing the contribution of forest resources and lands to sustainable development.

31. The Project was conceived as a five-year project. Its design and implementation represent a joint effort between the Brazilian Forest Service of the Ministry of Environment, local Governments, GEF and FAO.

32. The total project budget was USD 65 520 000 of which USD 8 850 000 (13.5 percent) comprises a full-sized project grant from GEF. The co-financing amounted to USD 56 670 000 that was disbursed by the federal Government, local Governments, the Amazon Fund and the Forest Investment Program in the framework of the Climate Investment Fund (CIF). FAO committed USD 300 000.

33. The Development Objective of the Project was to "provide good quality information and analyses about forestry resources and land use and cover to improve policies and decision-making by stakeholders, in order to increase the contribution of forests to the Brazilian sustainable development". The Global Environmental Objective was to "facilitate the decision-making process on forestry resources management, in a clear and participatory way, emphasizing the reduction of non-sustainable changes on land use to conserve biodiversity and carbon stocks"

34. The activities of the Project have been organized into four components:

    i. Component 1. National framework for forest resources monitoring, analysis and strategic decision-making.
    ii. Component 2. Capacity building for the management of National Forest Management and Assessment System (NFM&AS).
    iii. Component 3. Establish the forest resource baseline and monitoring and information system.
    iv. Component 4. Support for policy reform to enhance the contribution of sustainable forest management to national development and global environmental benefits.

35. Additionally, the NFI Project has been structured into four outcomes:

    i. Outcome 1. National framework for forest resource and land monitoring and assessment (including biodiversity and carbon in forest), analysis and strategic decision-making is established and operating
    ii. Outcome 2. BFS and partners have the capacity to collect and analyse information about forest resources and influence development of policies more effectively.
    iii. Outcome 3. Information about forest resources, and land use and cover is improved and widely used by clients at the national and local levels and for reporting to international fora.
    iv. Outcome 4. Conservation, sustainable forest management and climate change adaptation/mitigation measures are mainstreamed into policies, plans and practices in relevant sectors at the national and subnational levels.

36. A mid-term evaluation was carried out by the FAO Office of Evaluation (OED) in 2015 to assess progress towards expected results. Overall, it considered the project's performance as moderately satisfactory. Likewise, it confirmed that projec activities were of high relevance to achieve the Development Objective and the Global Environmental Objective, and concluded that they corresponded to the goals, objectives

and strategic programmes of GEF, FAO and BFS.

37. At the time of the mid-term evaluation, efficacy of Components 1 and 2 was found to be moderately satisfactory. With regard to Component 4, it was moderately unsatisfactory. Component 3 was the only one to achieve satisfactory efficacy.

38. The National Forest Inventory (NFI), the most "visible" project result, aims to collect and make available qualified information on the country's forest resources based on a solid and standardized methodology. Its results meet international demands on forest resources, and on the elaboration of policies and strategies such as the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD).

39. The New Brazilian Forest Code (Native Vegetation Protection Law No 12,651 of 25 May 2012) establishes the National Forest Inventory in Article 71, emphasizing cooperation between the federal Government and States. This is extremely important as it provides legal support and strengthens the implementation and sustainability potential of project results.

2.1 Theory of Change

40. The Theory of Change and its narrative were developed by the evaluation team, and are presented in Appendix 2. They were developed based on document review and interviews. The evaluation of the TOC is based on this evaluation's main findings.

3. Evaluation questions: main findings

3.1. General findings

41. The evaluation of the BRA 079 Project represented a process of intense learning in a country of continental dimensions and whose territory is characterized by very diverse geographical biomes and social and economic conditions. The challenge of implementing a national structure for monitoring forest resources, analysis and strategic decision-making becomes more intense when considering the need to engage partners at federal and state level; and to develop capacities ensure that project results are used for decision-making and the elaboration of public policies, plans and programmes that lead to the sustainable management of Brazilian forest resources.

42. The Project and its most "visible" result, the NFI, were thoroughly prepared, in a collaborative way, and this was decisive for the initiative's success. The project was relevant at the time of its preparation, and continues to be relevant. GEF's funding was fundamental to support activities that were critical to the project's success, such as the development of a national methodology, training of teams and data analysis (including botanic identification, analysis of soil biomass, stocks, vegetation cover, socio-environmental data, etc). The project also helped to leverage other funding (from states governments, the Amazon Fund and the FIP-Cerrado) without which it would be impossible to accomplish a task of such dimensions. The flexibility for the use of the BRA 079 Project resources was fundamental for these results, in a context of difficulties in managing public resources and the bureaucracy of the country, aggravated by public spending contingencies that started in 2017.

43. FAO's key role during all stages of the project was highly recognized, from the preparatory stages to project implementation. Therefore, it would be advisable for FAO to keep participating in the post-project continuity, both in implementation and in technical support via the Lead Technical Officer (FAO headquarters).

44. The project contributed substantially to the improvement of capacities in the forest sector in the country. The BFS, herbariums, companies and universities involved, as well as key partners such as the Brazilian Agricultural Research Corporation (EMBRAPA), declare significant gains in capacity and the creation of new areas of interaction and action, including internationally. All signs point to the sustainability of these capacity gains: there is installed capacity in the country for the continuity of the NFI.

45. The project also provided important information gains with regard to forest resources, biodiversity and adaptation to climate change. Even though the NFI has not yet covered the entire national territory, the data collected is considered relevant for the intended purposes. The great challenge is precisely the conclusion of the first round of data collection and analysis, in particular considering the dimensions of the country and the field conditions of the Amazon biome.

46. The delay in the completion of the first round of NFI, which was reflected in the need for successive extensions of the Projects term, is due to the aforementioned challenges, as well as to factors largely beyond management control (which are linked to Brazilian norms and to the country's administrative management modus operandi). These factors impacted, among others, on: i) delay in obtaining and releasing co-financing resources (in particular international ones); ii) limitation of use of existing financial resources due to the cuts and spending ceiling (enforced since 2017); iii) delay and inefficiency in the creation of the IT system due to lack of flexibility to hire more specialized service providers; iv) delays in signing technical cooperation agreements due to bureaucratic procedures; and v) changes in institutional management and technical teams throughout several governments, mainly at state level. Regarding government staff turnover, in particular, a positive factor was the maintenance of Project management at the BFS, despite the successive changes of federal Government.

47. Notwithstanding this relative "shielding" of the Project in relation to the national context, the abovementioned difficulties have affected its implementation. The NFI IT system is a significant bottleneck and needs to be resolved. Despite the recognition of its fundamental importance, and the continuous management efforts to solve them, the IT system still presents many problems which hinder the achievement of NFI results in the states, and the dissemination and use of NFI information.

48. These implementation issues, finally, reverberate (as a delay) in the application/use of data for the formulation of policies, plans and other uses that can contribute to the sustainable management of forest resources, better land use, preservation of biodiversity and tackling of climate change. After all, the NFI's *raison d'être* is to help the country to better manage its natural resources, promoting sustainable development in light of the national commitments made by the country through various conventions.

49. There are current and potential uses already identified for the NFI results and data in the forest management, monitoring and biodiversity management sectors. Also, numerous discussions have already taken place with several potential partners for the use of NFI's data in research, analysis and other applications. A certain integration is already foreseen within the BFS itself (contributing to the forest concession policy process), in some states (notably the State of Rio de Janeiro, [RJ], State of Santa Catarina [SC] and State of Ceará [CE]), and also with important partners such as EMBRAPA, The Chico Mendes Institute for Biodiversity Conservation (ICMBio) and the Botanical Garden of Rio de Janeiro. Botanical identification data is already available for wide consultation on online platforms.

50. There was a decrease in effective participation of states in the NFI. Internal discussions on the topic within states were also generally weak, and states not always responded to the BFS' attempts to articulate. Leadership was usually in the hands of state environmental organizations (OEMA) and in many cases this leadership did not develop.

After the initial presentation meeting for the project (invited by the BFS), the follow-up meetings – when they occurred - were more informative than participatory. Thus, the appropriation of the process by state partners is still timid. This is related to the challenges outlined above, but also to BFS' articulation with the states, which was in general insufficient and punctual (one-off).

51. At the same time, throughout its implementation, the Project has established partnerships with other GEF projects and national initiatives, such as the GATI project, the Mangue project, the Reflora project, SiBBr, the FIP project and the Amazon Fund.

52. It is necessary to continue trying to engage partners in the process, so that NFI effectively becomes a national structure continuously fed with new data and, above all, used for decision-making in several sectors.

53. Almost all of NFI's current partners demonstrate a clear interest and commitment in participating in the next rounds of the NFI. Support for training and for hiring of human resources, BFS's articulation with states for their greater engagement and ownership of the process, as well as financial support, will be important for the continuity of the initiative.

54. For the future, BFS's leadership strategy for NFI implementation, which is widely recognized and approved, needs to be consolidated. At the same time it is essential that BFS acts as a guardian, as a beacon, as a seal of quality and that it supports the federal institutional process; it is necessary to assess the institutional capacity to guarantee the NFI within the BFS, maintaining and continuing the NFI, even in the absence of support from international projects.

55. In addition, it is essential to internalize and socialize the NFI's strategic issues and its potential in the various Executive Coordination on Forest Information (GEINF) and BFS/ Ministry of Agriculture, Livestock and Food Supply (MAPA) management and operations spheres, aiming to consolidate the institutional ownership of the NFI in the BFS, to guarantee its sustainability.

56. Still in this direction, it is necessary to consolidate and confirm the NFI's financing strategy in states with non-federal resources, while the leadership, management and methodologies are determined by BFS at federal level.

57. Similarly, while the interaction and action of the technical commission in all stages of the NFI was very positive, the NFI "domain" was concentrated in a few people. It is important to secure the extension and renewal of NFI's ownership to ensure "human" sustainability.

58. The evaluation team considers that it would be unfair to scale the degree of success of the Project based solely on the level of achievement of quantitative targets from the GEF indicators (Appendix 3), disregarding the broader scenario (many times outside the control of the management team). It should also be noted that project design was quite ambitious: results linked to changes in public policy (Component 4) are generally

difficult to obtain, as they ultimately depend on the action of actors who can be influenced - but not controlled - by the Project. On the other hand, it is fundamental that the institutions responsible for implementing the Project reflect on implementation difficulties or strategies that could have leveraged some results.

59. Thus, the evaluation team *recommends that the reflection regarding the success of the Project 079 should jointly consider the GEF ratings, the interference of external factors outside the Project's control, the advances and "impacts", and the need for adjustments and lessons learned*. With this in mind, and taking all the above factors (and their detailing in this document's chapters) into consideration, the evaluation, in accordance with the GEF scale is considered *Moderately Satisfactory*, as shown in Table 3 below, also available in Appendix 4.

60. It is important to note that this rating is intrinsically related to the context in which the project was designed, namely the fourth GEF cycle (2006-2010) and, at that time, project results frameworks would include outcome and output indicators for both GEF financing and co-financing efforts. From GEF-5 onwards, based on lessons learned from the previous cycle, it stopped including outputs and outcomes that would extrapolate the capacities and authority of the Project Management Unit, e.g. changes in legal frameworks and policies that should be approved by the Parliament or line Ministries. Therefore, the MS rating of this final evaluation was highly influenced by the project design, despite the satisfactory performance of the PMU.

Table 2: GEF evaluation criteria rating table

FAO - GEF rating scheme	Rating	Summary Comments
Overall rate	**MS**	The project is relevant and there are many significant advances. The project achieved much of the planned results, but few on Component 4. Despite the extensions and the commitment and quality of the implementation team, numerous challenges prevented the project from covering the entire national territory. Partner engagement and ownership was partial. There are concerns about project sustainability
1) RELEVANCE		
Overall relevance of the project	MS	The initial relevance of the project is maintained and projected for the future; the relevance of the Global Development and Environmental Objectives is maintained; the design of the project and the Theory of Change were adequate to achieve the objectives, but somewhat ambitious as many projects were designed within the fourth GEF cycle (2016-2010).
2) ACHIEVEMENT OF PROJECT RESULTS (EFFECTIVENESS)		
Overall assessment of project results	MS	Results were achieved in three of the four Objectives. However, results of Components 1 and 3 were only partially achieved; data use and dissemination is still incipient (component 4).

Result 1 - NFM&AS	S	Articulation of agreements, but with some deficits; Technical Committee and Commissions have been effective; appropriate institutional arrangements; pilot tests in one municipality and one Indigenous Territory (IL) were successful.
Result 2- Capacity Building	S	Methodologies and manuals developed and consolidated; successful strengthening of herbariums; pilot tests in one municipality and Indigenous Land (IL) were successful; 644 people trained, 19 herbaria strengthened.
Result 3 - Baseline and Information System	S	12 Reports from 10 states plus IL and Caçador Municipality, frameworks ('tableaus') from 12 states available; NFI performed fully in 17 states + Federal District, partially in 6 states and not performed in 3 states.
Result 4 - Support to Policy Reform	MU	Dissemination through 12 reports, website, symposia, folders and 2 videos (one lasted 3'30" and the other 9'30"); weak articulation of public policies in the various spheres; delay in the availability of NFI data.
3) PROJECT EFFICIENCY, IMPLEMENTATION AND EXECUTION		
Overall quality of project implementation and adaptive management (implementing agency)	S	Adequate financial implementation; good local and headquarters technical assistance; agility and feasibility of contracts, resources acknowledged.
Quality of execution (executing agencies)	S	Significant articulation effort; great methodology and capacity building efforts; great data systematizing and analysis efforts with non-controllable external factors; reduced effort to influence public policies.
Efficiency (including cost effectiveness and timeliness)	MS	Delay in the schedule; difficulties in enabling co-financing; the project's extension allowed better achievement of the targets; the impact of the reduction of NFI's cost via companies is not guaranteed.
4) MONITORING AND EVALUATION		
Overall quality of M&E	MS	The project did not have a *specific* M&E system. Plan and consultancy were not carried out. Regular and efficient reporting process. MTR performed. MTR recommendations partly complied with.
M&E design at project start up	S	M&E programmed according to the regular implementation of FAO-GEF projects. Consultancy and drafting of an M&E plan foreseen.
M&E plan implementation	MS	The project did not have a *specific* M&E system. Plan and consultancy were not carried out. Regular and efficient reporting process. MTR performed. MTR recommendations partly complied with.
5) SUSTAINABILITY		

Overall sustainability	ML	GEINF's operational structure is limited. The availability of NFI resources is not guaranteed and is difficult. The NFI is explicitly included in the Forest Law and has been declared a priority by the current Brazilian Forest Service (BFS) Board. The current context of environmental policy in Brazil is confusing. There are concerns regarding the sustainability of NFI in the future (as the main output of the Project 079).
6) STAKEHOLDER ENGAGEMENT		
Overall quality of stakeholder engagement	MS	The partners were engaged in the project and NFI and expressed interest and commitment with post-project activities (future phases). The quality of partner engagement varied and depended on the level of BFS articulation (sometimes weak) or the level of partner interest (e.g. states with low commitment to use the NFI data)

3.2. Relevance

EQ1. How relevant were the project outcomes and objectives to national and global efforts aimed at improving the sustainable management of forest resources?

EQ2. Was the project design adequate for delivering the expected outcomes?

Finding 1. Relevance at the beginning of the project. The Project was relevant at the time of its elaboration; its need was identified by key stakeholders from the forest sector who also participated in its elaboration and testing of the methodology. The Project contributes to the Development and Global Environmental Objectives.

61. The Project was relevant at the time of its elaboration. Its relevance became clear when it was identified that the country did not have enough consolidated and systematic information at national level to monitor the state of its forests, its uses and land resources, forest biodiversity and carbon stocks. In addition, this information was important to substantiate strategic decisions on the sustainable management of these resources, for biodiversity preservation, and also for the fulfilment of international commitments signed by the country, such as UNFCCC.

62. In 2005, as part of the preparation of the Global Forest Resources Assessment, technical cooperation between FAO and the Government of Brazil (TCP/BRA/3103) supported the creation of a national technical commission with representatives from academia, the federal government, subnational governments and other key actors in the forest sector in the country to discuss the elaboration of the Project and to develop its methodology. The process included several workshops and learning about international forest inventory experiences. The methodology was tested in several biomes until the consolidation of the process, of the resources and of the capacities needed to execute. The results were consolidated, among others, in a field manual. Since the establishment of the BFS in 2006, this institution has been responsible for the Project's articulation

process, including articulation with the states.

63. The final phase of the project preparation took place from 2009, supported by a GEF Project Preparation Grant.

64. The adhesion and endorsement of key stakeholders of the forest sector in the country, such as EMBRAPA Forests, Brazilian instate for geography and statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE), the Ministry of Environment, respected scholars and the Brazilian Forest Service itself, demonstrate the Project's importance for the country at the time of its preparation.

65. Most of the participating actors (forest sector specialists) were usually linked to federal entities (government, local authorities or university), which was related to the main purpose of the commission (defining the methodology). Private sector, OEMA and non-governmental organizations (NGOs) participated in the drafting phase at a workshop, with project preparation grant resources.

Finding 2. Present (and future) relevance. Project results (information on forest resources, installed capacity, among others) are considered extremely relevant for the country. In particular, the Project was part of the NFI initiative as a whole. NFI produces relevant and updated information and, together with other instruments and data, this improves forest management, monitoring and conservation of forests and biodiversity, and estimates of biomass and carbon emission. This way, the Project contributes to achieving the goals taken on by Brazil in international conventions.

66. Overall, when asked about the *relevance of the project for the country today*, most respondents said it is *extremely relevant*. NFI is recognized as a "*certified*" *and updated reference on information about the country's forest resources*, and *the BFS*' *leadership is pointed out as a key factor for NFI's reliability"*. Informants highlight the importance of carrying out the National Forest Inventory regularly (every five years, as planned); the validity of the effort is questioned if this regularity is not maintained.

67. Project relevance for NFI should be particularly highlighted in comparison to other funding sources: *GEF funding* is flexible and allows for different types of actions to be carried out. It was fundamental not only so that the Project could be quickly initiated, but also because it funded key aspects for its development as a whole, such as the improvement of the methodology, capacity building for data collection, hiring expert botanic identification consultants, and quality control.

68. The total or partial financing of NFI by some *states*, such as SC, RJ, CE, PR, demonstrates the relevance of this instrument for these actors, and there is expressed interest in its permanence. For these actors, the main interest is the knowledge of forest resources and the possibilities and needs for forest management and conservation.

69. Project relevance is internally recognized by various departments of the BFS:

    i. Forest Fomentation and Inclusion: data on stock, regenerating forests and areas to be recovered, and socio-environmental data are considered important for

forest development, but must provide micro-scale, mesoregion and biome overviews.

ii. Forest Information: NFI can offer statistics and technical indicators for policies and programmes. Its importance to subsidize forest management is even greater considering the regularity of the information (NFI every five years).

iii. Forest Monitoring and Audit: NFI provides data to subsidize technical studies for national forest concessions.

70. With regard to *biodiversity,* NFI increases the collection of botanical material, strengthens programmes such as Reflora and SIBBR (subsidizing flora and biodiversity research) by improving the processes of identification and classification of threatened species.

71. From a *strategic* point of view (*including climate change*), the importance of NFI is highlighted for providing a portrait which can be taken into account in policymaking (e.g. to combat desertification). It is also considered an important instrument to demonstrate, quantify and qualify the conservation of Natural Resources in indigenous lands.

72. NFI can also improve biomass and carbon emission estimates, and is considered a reliable benchmark for monitoring these resources over time, provided that it is carried out periodically as planned. There was an attempt to formalize NFI along with the REDD+ system through a permanent seat on the CONAREDD. Within REDD, Brazil has received USD 96 million from the Green Climate Fund (GCF) for reducing emissions and deforestation. Emission calculations, now based on mapping data and satellite images, can be validated with NFI field data.

73. Along with other instruments, measurements and databases (such as CAR, satellite tracking maps, and preservation units), the data produced by NFI is considered to be extremely important for decision-making in:

i. forest planning and management, including concession and management of public forests and sustainable management;

ii. monitoring of the implementation of forest management plans (compliance) (e.g. SIMEX);

iii. policies to encourage agroforestry and exploitation of non-timber natural resources (e.g. seeds, research and use in the cosmetics and medicinal industry);

iv. monitoring/surveillance of environmental crimes (e.g. deforestation);

v. commercial timber certification processes;

vi. management of conservation units and biodiversity in the conservation units (CU) (e.g. joint work with ICMBio's National Biodiversity Monitoring Programme project - "Monitora");

vii. finally, some believe that, due to the importance of forest resources for Brazil, the country should have a Ministry of Forests responsible for executing NFI with its

own resources. NFI would therefore be a key instrument for the elaboration and management of Forest Policies in the country.

Finding 3. Project design. Project design is internally coherent, and has not undergone significant adjustments, though the design of activities could be more summarized. Implementation was carried out in accordance with the design, but could have been more efficient. This design was used as a basis to obtain co-financing when designing projects.

74. Regarding *project design*, the analysis of the Project logic model indicates internal coherence: the activities, as designed, were adequate to achieve the planned objectives. In other words, in order to generate solid evidence that could provide the basis for informed decision-making, it would be necessary to consult different actors in the country, through partnerships (Result 1). In the partnerships, it was necessary to combine capacity building to carry out a data collection that was standardized throughout the national territory and respected the specificities of each biome (Result 2). Once processed and analysed, the use of the data would be important to several actors in national and international territories (Result 3). The data should also be integrated into policies, plans and practices for strategic decision-making, aiming at preservation, sustainable forest management and climate change adaptation/mitigation measures (Result 4).

75. Project design was adequate and executed according to the expected logic. Some indicators were adjusted, but there was no relevant change in the components and subcomponents. The distribution of efforts was proportional to what was expected, although the preparation time between one phase and another (for example, between data collection and analysis) could have been shorter. Eventually, the Project was excessively detailed in a very high number of activities which, in some cases, became obsolete or not feasible due to circumstances outside the control of the implementation team. These details will be better clarified in section 3.7 below. Despite budgetary reviews, the percentages for each component were maintained in relation to the total.

76. Prior to the launch of the Project, risks were evaluated on two fronts: environmental (climate change and biodiversity), and social and institutional risks (sustained public and political commitment, support for project activities by key partners, quality of information, and participation of stakeholders in committees). Almost all aspects were evaluated as of low risk, with the exception of the risk of lack of commitment, which was assessed as low to medium, and the risk of increased cost in collecting climate change data, assessed as unknown. Risk analysis also indicated measures for its mitigation. These risks were taken into account during project preparation through consultations with stakeholders and reviewing experiences from other countries.

3.3. Monitoring and evaluation

EQ6. Did the project count on a structured M&E system? Was the information from this system

used to make timely decisions during project implementation?

Finding 4. Monitoring and evaluation. Overall, the Project had a structured monitoring and evaluation system. However, the recommendations generated in the mid-term evaluation were not fully implemented. Some indicators and results formulated were repetitive and the results framework did not include intermediate or immediate results.

77. The project had a structured monitoring and evaluation system; partial (project progress report) and annual reports (project implementation report) were completed and sent. Annual monitoring missions were carried out by FAO headquarters technical team, and in 2015 a mid-term evaluation mission was carried out. All these missions generated related technical reports.

78. The response to the MTE recommendations by the team involved in project implementation was partial and its impact on implementation was moderate, as can be seen in the recommendations matrix below.

Table 3: Actions post mid-term evaluation

Recommendation	For who?	Description	Action carried out post-MTE
1	PMU and FAO Brazil	Establish systematic dialogue between governmental institutions and other partners (organizations or corporations) working on municipalities and states to monitor and support field inventory-related activities.	Partially carried out. There was dialogue, but not in a systematic way to ensure continuity, feedback and follow-up. Initiatives with Mangueirinha IL and collaboration with the Mangue Project were the result of new inputs.
2	PMU and FAO Brazil	Establish measures to ensure the quality of data collected and the work of the team in charge of data collection.	Generally carried out.
3	PMU and FAO Brazil	Reinforce the capacity of key players in the institutions and corporations involved in data collection using the NFI-BR methodology.	Generally carried out.
4	PMU and FAO Brazil	Improve the procedures of collection, processing and storage of soil and materials with more efficient methods that protect and control the quality of samples collected.	Generally carried out.
5	PMU and FAO Brazil	Prioritize data processing and analysis to get relevant information to decision makers which is the main objective of the project.	Partially carried out, not enough to achieve the proposed targets.
6	PMU, FAO Brazil, Government and GEF	Strengthen project communication to raise awareness among players required to the sustainable forestry management and support the dissemination of materials prepared and results achieved.	Partially carried out. The efforts were not expressive and reached mainly technical audiences.

7	Government	Establish the National Effectiveness Committee to provide guidance on actions in the field of public policies for the forestry sector in Brazil.	Not carried out.
8	PMU	Strengthen institutional arrangements to support the implementation of public policies, promoting the engagement of all players form the central government to states and municipalities and other institutions and projects.	Not carried out.
9	FAO	Strengthen, restructure and improve project management, fostering an effectives monitoring system.	Generally carried out.

79. FAO's support with regard to project monitoring was evaluated as very good: monitoring missions provided valuable knowledge and helped improve the quality of the project. Respondents highlight high technical level and extensive experience of the FAO Monitoring Officer who accompanied the Project.

80. On the other hand, project progress reports and project implementation reports in this project seemed to have more of an accountability than a learning character, since there is no evidence that formal feedback on these products has reached the project executive management.

81. Within the Brazilian Cooperation Agency's internal project management system (SIGACP), it was reported that project data was up-to-date.[2] There are indications that project progress reports and project implementation reports were not sent regularly and spontaneously to GEF Focal Point to inform about project progress.

82. The M&E system included environmental result indicators. For each of the four major project components, higher level results were drawn, and no intermediate or immediate results were specified. These seem to have been replaced by indicators linked to each of the four main outcomes. However, these indicators are sometimes repetitive, leading to repetition of results in reports and other monitoring documents (e.g. use of NFI results or information to influence/elaborate policies, plans, etc). The M&E system did not have specific indicators to monitor gender or socioeconomic outcomes.

3.4. Project efficiency, implementation and execution

EQ5. How did project activities, institutional arrangements, partnerships in place and resources available contribute to, or impede, the achievement of project results and objectives?

Finding 5. Partnerships. The Project established partnerships through technical cooperation agreements, and in general this option worked well. Partnerships with herbariums collaborated with quality control, resulting in the strengthening, increase in capacity of the sector and

[2] It was not possible to corroborate this information with the project manager at ABC/SEAIN, because he did not respond to the interview request.

advances in botanic identification. Articulation with state actors produced positive results, and states where there was co-financing had more ownership of the process. However, this articulation could have been done more continuously in the other states. State commissions have only operated in a few states, but other relevant partnerships (e.g. with EMBRAPA and FUNAI) have been successful.

83. Partnerships in the Project were formalized through Technical Cooperation Agreements (TCA), which included the purchase of equipment, furniture and materials (e.g. in the case of herbariums), the hiring of consultants, travel support and the provision of Technical Support (e.g. in the case of states, training of company teams, support to company selection processes). In general, this option worked well as a form of partnership, although in some cases (e.g. some universities) the process was very time-consuming and unfeasible (for reasons beyond the project's control), and generated delays. In some of these cases (e.g. UFRA), the TCA was replaced by a Memorandum of Understanding (MOU), and the partnership was concluded. This reflects the commitment of partner institutions to the cause and importance of NFI to the country and its institutions.

84. Partnership with herbariums worked very well in general. The support provided by the Project resulted in the strengthening of herbariums and the increase of capacity in the sector, as described in section 3.7. It also allowed for important advances in terms of botanical identification: some archives have significantly increased (e.g. UFRA), and the equipment allowed the scanning and online availability of all existing samples, as well as NFI samples. Among the herbariums there was also an intense exchange of experiences and information (e.g. through Thematic Committee meetings and through the circulation of experts to identify species).

85. The partnership brought the herbariums closer to the forest inventories, and allowed an evaluation of the process with fundamental recommendations for improvements to the second round of NFI. This partnership was also fundamental for quality control and improvement of the process of collecting vegetable samples. Herbariums began to train the data collection teams through one- or two-day courses (additional to the training offered by BFS, to ensure that material collected and processed by companies was suitable for identification and storage).

86. However, in general, there was a high concentration of data collection in a short amount of time, which resulted in concentrated efforts by the herbaria teams. In some places, many professionals were working at the same time to process the samples; in addition, delays in the collection process, for example in the Amazon and Cerrado biomes, generated accumulation of material to be identified in the last months. The identification was very slow in these cases, since the permanent teams of the herbaria are small and the contracts with most of the consultants had already been concluded. Therefore, they were unable to finalize the identification of all the material before the

end of the Project.

87. Communication with herbaria was generally appropriate. However, after the conclusion of the species identification and the delivery of the final reports, herbariums were consulted only when the analysis team found it necessary; therefore, they were not significantly involved in data analysis and elaboration of results. In some cases, this resulted in errors in state reports, most of which have been fixed before the final releases.

88. In states where there was co-financing, the leadership and ownership of the process by state actors was clearer. In states where there has been stronger articulation, support provided by BFS in the hiring of companies was considered important (for example, in the drafting the Public Notice/TOR).

89. In initiating the NFI process, BFS called state actors to the project presentation meeting and partnership establishment. After this initial meeting, there are indications that the articulation was not given continuously. In one state, it was not possible to find a government representative with real knowledge of the NFI, and in others, the state representative was only partially aware of the process.

90. The challenges of establishing this partnership with states - particularly with those where there was no co-financing - appear to be due not only to the lack of a continuous process of articulation, but also to *circumstances outside project control*, such as lack of interest by state governments, and turnover in state secretariats, including management and technical personnel. However, the establishment of a continuous communication channel between BFS and states could have increased the success of articulation with state actors.

91. NFI state monitoring committees worked well, but operated only in a few states among the respondents (SC, PR, PE). An internal technical commission has been set-up in the State of Ceará. In the cases examined, the commission had different degrees of relevance depending on how it was conducted. In the case of State of Paraná, for example, the institutionalization of the committee through a resolution and the involvement of strong local partners and various sectors, such as EMBRAPA Forestry, EMATER and members of the Agriculture Secretariat resulted in the committee's important role throughout the data collection process (including the contracting of companies and quality control), and in ownership of the NFI process in the state.

92. Especially in states where there was co-financing, some form of collaboration in quality control activities took place (e.g. Ceará and Paraná). However, the long duration of quality control missions (10 to 15 consecutive days) makes state monitoring more difficult, due to the lack of personnel. Although densification was presented as an option to all states (with their own resources), not all those who expressed their intention allocated the necessary resources to do so (e.g. PB and PE). In some states, the articulation of BFS with environmental agencies to define the priority region for NFI

and/or other adjustments could have been better.

93. There was little *joint* evaluation of results, but rather a consultation process, almost always restricted to a presentation of the preliminary results and the making of suggestions and corrections. In general, once the data collection is concluded, analysis is carried out by BFS and a preliminary meeting for presenting the results and collecting suggestions and criticism was carried out in the state. Since the scheduling of this meeting was at the state's discretion, in some cases the meeting had few participants, and in at least one case, herbariums were not invited to the presentation.

94. Criticism and suggestions have been generally incorporated into the final reports, when relevant to the scope proposed by BFS for each case. For example, in one state, BFS completely reviewed the data processing (due to the state's suggestions to change equations) and reworked species lists, among other significant changes. To ensure quality and avoid inconsistencies, it will be important for BFS to maintain ongoing dialogue with partners about NFI results and reporting.

95. Although not a planned project outcome, articulation with herbaria would be desirable and would show protagonism from states; yet, it was scarce. According to herbaria representatives, the relationship was established only between herbaria and BFS, and (in some cases) between herbaria and the data-collection companies, for the quality control of the samples.

96. In short, articulation with states seems to have taken place at special moments of the Project, but it was not a continuous process to strengthen NFI, and there was no application of results. Undoubtedly, the lack of state committees - or the lack of articulation, in the states where committees existed - hindered the dissemination and application of NFI results at state level.

97. The *regional committees* were not created, but this does not seem to have negatively influenced the Project. However, these committees could have been interesting to analyse and consolidate results, for comparisons with other technical-scientific data and for referring NFI results to the scientific world. These committees could be articulated in the near future around existing Permanent Parcel initiatives (networks). In addition, these committees could play a role in promoting the use and application of NFI results for regional public policies (e.g. technical subsides for standard instructions on sustainable forest management).

98. There were two other successful partnerships:

    i. EMBRAPA has participated in the Project since its conception and has collaborated in several ways, in various roles (development of landscape methodology, identification of species, co-organization of symposia, participation in the National Technical Committee and the PR state Committee, etc.), through its various units in Pará (CEPATU), Federal District (Cenargen) and Paraná (Forestry).

ii. FUNAI successfully collaborated in the inventory at Mangueirinha IL, developed after the MTE's recommendation, which resulted in a pilot to evaluate and model the implementation of NFI on indigenous lands.

Finding 6. Activities and resources. The companies' selection process has been geared to lower price, which reduced implementation costs. On the other hand, this strategy has raised some questions about quality in the execution of field work and also contributed to increased turnover within companies.

99. The company procurement process had several models, albeit always with a lower price orientation, since the technique (methodology) had already been defined and should be followed by all selected companies.

100. When the procurement was carried out via FAO with the GEF Project 079 resources, a public bid was conducted based on an analysis of the technical capacity, which had to meet minimum criteria. The final selection was based on the lowest price between the shortlisted companies. This model allowed for companies to receive a first instalment by submitting a work plan, thus enabling an initial (albeit reduced) resource to start the field activities.

101. In the case of companies' selection with government counterpart resources (e.g. funded by the Amazon Fund), the contract process took place in the form of "reverse auction". In this model, previously authorized companies made lower offers until the lowest value was reached. In these cases, the release of payments occurred exclusively by submitting the data of conglomerates measured in the field; consequently, the company needed its own (significant) resources to carry out the work until the payment. In the case of procurement funded from FIP/NFI resources to the Cerrado, the process was similar to Federal Law No. 8,666, but the procedures were established by the Inter-American Development Bank (IDB), also based on the lowest price. In this case, an initial resource to enable the start of field activities was paid upon delivery of a work plan.

102. As a natural consequence, competitive processes developed towards (an exaggerated) reduction of prices, compromising quality and feasibility in the field. This was partially resolved by establishing a minimum value, but not all companies were in a comfortable situation for the execution of the work. Some reported having given up the auctions because the prices were absolutely unfeasible, considering the logistic needs (e.g. one month of field work, long distance traveling) and compliance with labour law. As a result, some companies underpaid and offered questionable conditions for the execution of field work (which were already naturally challenging, given the high variety of tasks to be performed, the high quality expected, and the logistical issues). In some cases - particularly at the beginning of the process - it was necessary to interrupt contracts and hire new companies to redo the fieldwork. Some professionals worked to gain experience, not money.

103. These issues also contributed to high turnover of teams in companies, which led BFS to

having to train new teams even when a company was hired more than once.

104. In summary, although the companies' selection reduced the cost of NFI's implementation, allowing more to be accomplished with the same resources, the approach adopted does not seem to be the safest to guarantee the quality of the work, and the work conditions of the people involved.

Finding 7. Quality control. Quality control has generated positive results for the execution of data collection. The processing and analysis of botanical samples have worked well; the processing of other data has been challenging and time consuming due to issues that are beyond the scope of the Project.

105. With regard to *quality control,* the strong link between the National Technical Committee, instructors and quality control professionals (who were led by the instructors) ensured a rapid flow of demands, technical discussions and solutions to guarantee quality and operability in field work. *Data processing and analysis and the dissemination of results*, however, have been challenging for the Project and BFS.

106. Delegating the processing of samples, plant identification and species listing to the herbarium was a strategy that *worked well*, with the caveats noted above; but the input of the data into the SBF system has been pointed out as frustrating and time consuming. The system does not work satisfactorily (details are offered below).

107. Concentration of data processing and analysis in BFS' hands – a comprehensible strategy - has generated challenges which are in part due to the already familiar models of contracting of services according to Federal Law No. 8,666. This strategy contributes to the lack of ownership of results by partners, resulting in a slow process.

108. The need to make data analysis and dissemination of results more time efficient was addressed in the various FAO monitoring missions and was pointed out in the MTE. However, BFS was unable to provide adequate solutions to this problem, which weakened this aspect of the Project. This should not undervalue the Project itself, but it does - unnecessarily - weaken the future of NFI in terms of the application of results and, consequently, the continuity of its implementation in the future.

Finding 8. Adaptation of management to change. Project management has adapted well and learned from several changes, especially in methodology (which was continuously improved) and in partnerships. Quality control was adjusted to also include the approval of the companies' deliverables. The development of a system for the insertion, processing and analysis of NFI data, which has gone through several steps and, despite efforts, has run into some federal government management processes (outside BFS' control), has not yet been fully solved.

109. The Project was originally planned to be implemented in five years. Several factors required project management to be able to *adapt to constantly changing conditions*. Some of these factors were (to a greater or lesser extent) outside the control of the management team (for example, the budget cuts imposed by a constitutional amendment in 2017 – "PEC do Teto"). Others, however, were concerned that the Project

is in itself an intense learning process, since it is being executed in a diversity of biomes - some of them extremely challenging (Amazon and mangroves) - in a country of continental dimensions and whose management processes are notorious for being inefficient and bureaucratic.

110. To accomplish this complex task, constant adaptations were necessary, as the Project established new protocols and procedures ("piloting on almost everything").

111. Some examples of successful adaptation are:

i. The original idea of involving universities in implementation, whether in data collection or in quality control, had to be abandoned due to, among other factors, difficulties in establishing cooperation agreements and impossibility of the professors who were removed from their activities for long periods of time (required by field work). The solution found was to implement field work through companies, while quality control was done by consultants and accompanied - when possible - by state level technicians. The only place where NFI was carried out entirely by a university was in Santa Catarina, due to pre-existing articulation. This experience was very successful, with the involvement of several professors, institutional articulation in the state and with clear sustainability, since it is already in its second round.

ii. Training and respective manuals have been improved over time, building on feedback from field experiences (from companies, herbariums and from quality control). This worked very well and was extremely necessary considering the need to use the same methodology in biomes with complexities as distinct as the Caatinga and the Amazon.

iii. Landscape analysis has undergone significant adjustments throughout the process. The original operational design did not work efficiently and was adjusted. Also, available technologies (images, software) and additional support tools (e.g. CAR) have changed over time, making it fundamental to adjust the original methodology to this new reality. In this case as well, adaptation to change was efficient.

iv. The adaptation of quality control to include the assessment of companies' performance for payment authorization was considered by BFS staff to be almost inevitable. This function has been added to the main purpose of quality control (the identification of non-sampling errors). This adaptation helped solve an operational difficulty and respond to contractual/public resource management requirements, but it added a new task to an already demanding process (due to field conditions). Quality control of the field work and the necessary feedback with the NFI Technical Committee was maintained and worked, although not at the intensity initially expected.

112. Despite the management team's high capacity to innovate and adapt to the challenges, some obstacles were found and, as of the time of this assessment, had not been fully addressed (e.g., information technology).

113. The obligatory and bureaucratic procedures of the Brazilian public services resulted in the early adoption of a software (Access) for the input of data for the first states, and later resulted in the migration (and cleaning) of data into another software (NFI System), which is still being fully developed. One of the challenges in this system development process was the replacement of the company providing programme development services to BFS.

114. The development of the NFI system has been carried out along with the control of data-entry consistency and with quality control of the collected data. While these are essential processes for the production of consistent and high-quality information, they add another layer of complexity to a process that is already challenging.

115. Among the problems reported with the system are the lack of capacity to process a lot of data at the same time (e.g., a team had to plan to use the system at night and at early hours, when there was less data traffic and the system would not "freeze") and programming flaws that generated the need to rewrite data from entire parcels because it was impossible to correct a single error (since the data-entry quality control was done by BFS).

116. To overcome these challenges, the Project relied on contracted consultants to liaise between users and system developers, as well as on consultants specialized in data quality control to "clean" and migrate data to the new system. Still, IT challenges have caused delays in the process and hindered the achievement of more results in the states and consequently affected the dissemination of results. In addition, software development does not seem to be accompanied by the development of a data access protocol and policy, and there is a risk that there will subsequently be a mismatch between the policy and the system's design.

Finding 9. Change management. BFS has the installed institutional capacity to continue implementing NFI, but counts with a very small permanent staff. The Project was extended by three years, but the extension allowed for better use of resources and for the adaptation to a dynamic environment, which led to an effective achievement of planned goals.

117. The Executive Coordination on Forest Information of BFS has eight permanent staff professionals, and there is also high turnover (common in the public service due to professionals being "borrowed" among government agencies or taking on other positions within the government for long periods of time). BFS relies on the work of other professionals who have no permanent link with the public service to perform their functions. Specialized professionals to work on NFI data are also lacking.

118. This deficiency is mitigated by the fact that the entire *fixed staff of BFS GEINF has been trained and has mastered NFI routines*, so this capacity can be transferred in the future. In any case, the permanence and increase of the team depend on other sectors' decisions within BFS and the federal government as a whole, which represents a risk to the viability and efficiency of NFI in the future.

119. In other words, the challenges it was not possible to adapt to are beyond the control of the Project and, largely, also BFS capacity.

120. The expected project implementation period was five years (2011-2016). However, after several extensions, the actual implementation period was eight years (2011-2019). The extensions made it possible to make better use of available resources, to adapt to a dynamic environment and to better achieve the targets set.

121. On the other hand, in terms of delivery this is not a desired situation and could raise doubts about the real capacity of the main executing actors. It could also generate concerns regarding the viability of NFI every five years. However, as already mentioned, the Project (and NFI) suffered from unforeseen external interferences which impacted implementation.

Finding 10. Co-financing. 53 percent of planned co-financing was implemented, including state and international funds. However, the budget cuts provided by a Constitutional Amendment limited the execution of NFI data collection. By ensuring capacity building, quality control, methodology development and data processing and analysis, the Project has made all other activities viable, but without co-financing it would not have been possible to achieve the results so far obtained.

122. The table below presents the final situation (30 April 2019) of the co-financing provided for project implementation.

Table 4: Effective co-financing for project implementation

Source	Name	Type	Foreseen	Effective
			10^6 USD	10^6 USD
National Government	Federal Government	Donation	50.81	4.05
National Government	Federal Government	In-kind	5.56	9.05
Local Government	State of Ceará	Donation		1.13
Local Government	State of Sergipe	Donation		0.42
Local Government	State of Paraná	Donation		0.28
Local Government	State of Rio Grande do Sul	Donation		0.30
Local Government	State of Rio de Janeiro	Donation		1.51
Local Government	State of Santa Catarina	Donation		1.62
Multilateral Agency	Amazonia Fund	Donation		6.94
Multilateral Agency	FIP	Donation		4.31
Multilateral Agency	FAO	Donation	0.30	0.30
TOTAL			56.67	29.91

123. By the end of the Project, 53 percent of the originally planned co-financing was implemented. Although the federal Government's effective financing is well below

expected, it is important to highlight new sources of co-financing that have been added to GEF and FAO's budgets:

i. state resources to carry out NFI's field activities (CE, SE, PR, RS, RJ, SC), adding up to USD 5.26 10^6, corresponding to approximately 60 percent of GEF's contribution;
ii. resources from other international projects (FIP, FA).

124. The biggest co-financing problem was the delay in availability of international projects (FIP, Amazonia Fund), as reported in the various project progress reports.

125. This problem was aggravated in 2017 with the entry into force of Constitutional Amendment No 95 of 15 December 2016 (also known as "PEC do Teto" - "Ceiling Amendment"). The Amendment imposed strict limits for federal government spending, even if resources were available, and regardless of the source. In other words, even resources from international funds, when internalized in the BFS's budget, have been limited (as was the case with the Amazon Fund). Project resources did not suffer from this budget cut because administered directly by FAO.

126. In the States of Rio de Janeiro and Santa Catarina, financing was almost entirely guaranteed from state resources. In the State of Rio de Janeiro it was necessary to complement data collection at the end of the process, provided by the Project, which included training, botanical identification, soil analysis, quality control and reports; and in Santa Catarina, the Project contributed to landscape data collection and field data collection, hiring of long-term consultants to support data processing and analysis activities, and herbarium equipment. In Ceará, co-financing funded 50 percent of the activities.

127. Co-financing was necessary to carry out NFI's field activities, such as the hiring of companies, but *Project 079 was fundamental and made all other activities possible* - such as capacity building, development of methodologies, hiring of consultants and provision of equipment and material for herbariums, data analysis and data management system.

128. On the other hand, without co-financing it would not have been possible to achieve the results to date (45.2 percent of the country), since project budget corresponded to approximately 13 percent of the total budget foreseen for NFI. Co-financing was particularly critical for the execution of NFI in larger biomes, such as the Cerrado and the Amazon. Finally, delays in the co-financing processes were partially compensated by project extensions.

3.5. Stakeholder engagement

EQ9. To what extent has the project engaged stakeholders?

Finding 11. Stakeholder engagement. The Project engaged partners from academia, government agencies, municipalities, the private sector and state governments. BFS regional offices were involved according to the needs of NFI and the priorities of each region.

129. Partnerships, stakeholder engagement and their collaboration were analysed in detail in section 3.4above.

130. The Project counted with the articulation of different entities for its implementation. Several organizations were directly and indirectly engaged, from the following sectors:

i. Universities were engaged through herbariums (UFC, UnB, UFB), and through NFI's direct execution (in Santa Catarina state, FURB).

ii. Government agencies performed different roles, such as EMBRAPA (through its various units), ICMBio and FUNAI.

iii. Private sector: companies providing forestry services.

iv. State governments: co-financing and participation in project activities.

131. Effective participation from civil society organizations in the Project was not identified, with the exception of participation in the Symposia. Their participation in field NFI implementation activities is not essential. On the other hand, considering the role of civil society organizations (CSO) in public policy control, their involvement in actions related to Component 4 could potentiate the impacts.

132. Other articulations pointed out by informants and which could have been strengthened (and further explored at a later stage) by having potential synergies with NFI are: Ibama, rural extension public companies (EMATER), specific state bodies (Funceme, in Ceará, and SUDEMA in PB – the latter from previous experience with a United Nations Development Programme (UNDP)/FAO project), and Agricultural Development Secretariats.

133. BFS regional offices were involved as needed by NFI, and according to the priorities of each region. Particularly noteworthy is the involvement of the Northeast-UR and of the officials of Purus Madeira-UR, who participated intensively in NFI quality control missions.

134. Another potential FAO project that unfortunately did not become a reality is the REDESER Project for sustainable forest management and recovery of degraded areas in the semi-arid region. Considering that NFI was carried out in almost the entire Northeast region, it could directly contribute to REDESER with its results. Project financial execution started, but it was never implemented.

135. An unsuccessful approximation to the project PNUMA/ Ministry of Science, Technology, Innovation and Communication (MCTIC, digitalization of Brazilian biodiversity data) was attempted. A partnership between a UNDP project (use of non-timber biodiversity products) and Embrapa was also attempted.

3.6. Gender and empowerment of vulnerable groups

EQ10. To what extent and how did the project include social issues (including gender) in its design? Did the project contribute to the empowerment of vulnerable groups throughout its implementation?

Finding 12. Gender. The Project sought to involve more women with a view to gender balance.

There was greater involvement of women in the herbariums, and about 30 percent of women were hired for field work, as directed by BFS. About 44 percent of the interviewees in the socio-environmental study were women.

136. Regarding *gender*, the interviewees report that, in general, the selection process for hiring professionals was solely based on the analysis of curricula, and the herbariums informed that they did not receive specific instructions to consider gender aspects in the selection. In spite of this, the number of women leading and integrating herbarium teams was higher than men in the interviewed sample, even though it was not possible to ascertain how many men and women were hired as consultants. However, the greater number of women involved from herbariums does not seem to have been influenced by the Project, and is rather due to a strong female presence in this field of work.

137. BFS did suggest to the companies that women were hired to compose the field teams, especially considering the necessity of carrying out socio-environmental interviews. This resulted in a reported (by the respondents) average of approximately 30 percent women hired for field work.

138. The Project did not include specific indicators connected to gender or vulnerability issues. Specific questions relating to gender and use of forest resources, biodiversity or climate change were not identified in the socio-environmental study survey, neither were specific analyses on this subject identified in the reports already published.

139. Considering the states with reports already available on the NFI website which have informed the gender of the socio-environmental survey respondents (Paraná, Rio Grande do Sul, Rio Grande do Norte, Rio de Janeiro and Sergipe), approximately 43 percent of women and 57 percent of men were interviewed. In the Mangueirinha IL, the proportion is similar: 44% percent the 78 respondents were women.

140. The table below shows the number of women and men interviewed in the socio-environmental survey, considering the states with reports already available on the NFI website.

Table 5: Number of respondents per state

Number of respondents per state			
State	**Women**	**Men**	**Total**
Ceará	n/a	n/a	1034
Federal District	n/a	n/a	130
Paraná	717 (39%)	1119 (61%)	1 836
Rio de Janeiro	482 (51%)	463 (49%)	945
Rio Grande do Norte	164 (45%)	202 (55%)	366
Rio Grande do Sul	775 (37%)	1 320 (63%)	2 095
Santa Catarina	n/a	n/a	777
Sergipe[3]	422 (65%)*	227 (35%)*	649

[3] Sergipe's Report states that the respondents are 67 percent women and 37 percent men. For analysis purposes,

Total	2 138	3 104	7 183
Gender proportion in relation to total respondents [considering only the reports that inform gender difference]	43%	57%	5 891

Finding 13. Empowerment of vulnerable groups. The Project presents a successful case of vulnerable groups empowerment through NFI. In the Mangueirinha IL, for example, the resident indigenous population identified the potential of using NFI results to know and value their land, and to build partnerships for the provision of ecosystem services. This experience seems to have provided exchanges of information and knowledge between the resident populations and institutions.

141. The Project contributed to the *empowerment of vulnerable groups* through the realization of NFI within the Mangueirinha Indigenous Land (IL). The demand for carrying out the NFI in the indigenous land came from the ethnic groups residing in the land (Kaingang and Guarani Mbya), who were informed about the Project within the GATI project activities. These groups saw in the inventory an opportunity to better know their land, to educate new generations about their existing natural resources, and to value the environmental services they provide. Among others, the report may be used as evidence of environmental preservation (for example, for receiving part of the Environmental taxes [ICMS] payment, which is received by the municipality and further paid to the IL) and to carry out partnerships (for example, with private sector and/or with the city hall, for the production of seedlings).

142. NFI on Indigenous Land counted on the intensive participation of indigenous representatives, including trips to Brasilia and visits to IBGE, BFS and herbaria. Detailed reference of use of medicinal plants was removed, as well as other demands by the indigenous groups. The indigenous people actively engaged in data collection activities. A protocol for the implementation of the NFI process in Indigenous Land was produced in partnership with the Mangueirinha IL indigenous groups. The Project organized all the articulation, capacity building, indigenous groups involvement, as well as data collection and data analysis.

143. According to FUNAI, NFI was considered a successful experience that resulted in positive gains, information and knowledge exchange amongindigenous groups, generating important learning for FUNAI and for other actors involved. FAO management was reported as positively sensitive to the specificities of this process.

144. The Project did not identify specific quilombola[4] lands for the realization of NFI, nor did it deliberately exclude those territories. It is possible that conglomerates located in quilombola lands were included in the sample, but to confirm this it is necessary to

these percentages were rounded to 65 percent and 35 percent respectively.

[4] Quilombola lands are Brazilian hinterland settlement founded by people of African origin, most of them escaped slaves, called quilombolas. Article 68 of the 1988 Constitution of Brazil granted the remaining quilombos the collective ownership of the lands they had occupied since colonial times.

compare NFI data with the location of these territories.

3.7. Achieving project results

145. One of the dimensions to be evaluated is capacity building; since it is one of the objectives of the Project, the questions related to this dimension (13 and 14) will be answered in this section. The assessment of the permanence/sustainability of developed capacities will be integrated into the assessment of the sustainability dimension.

146. The list of the main products of the Project is set out in **Annex III**. A summary table of the main results achieved by the project can be found in **Annex IV** and the Logic Matrix detailed with the final results of the project is presented in **Annex V.**

EQ3. To what extent have project outcomes and objectives been achieved, and how effective was the project in achieving them?

EQ4. Did the project produce any unintended results, either positive or negative?

EQ13. Were the topics targeted by the capacity development activities based on the real needs and relevant to the sector?

EQ 14. Do the beneficiaries show enhanced capacities to collect and analyse information about forest resources?

Finding 14. The Project contributed significantly to providing quality information on the country's forest resources and land use, thus contributing to the Project Development Objective and to the Global Environmental Objective (GEF objective).

147. With regard to the Project Development Objective and the Global Environmental Objective (GEF objective), there is no doubt that the Project has significantly contributed to providing quality information about forest resources and land use. Even though the analysis and dissemination of results still need to be consolidated, there were important advances. An example is the preparation of FRA 2020 with NFI data. Therefore, a foundation has been built for a better formulation of policies and better decision-making on the sustainable use of forests. However, so far there are no signs of progress towards Project Development Objective Indicator "commercial and socioeconomic values of forest resources are measured and integrated by investments in the sector". It is noteworthy, however, that while NFI data may contribute to Indicators, definitions of investment and development policies of the sector are not governed by BSF and/or NFI.

148. Regarding the indicators of the GEF objective, while NFI results have been integrated in the forest concession programme, they are still not being used for forest management. NFI is now part of the regular concession procedure within BFS by GEINF and GEMAF departments (Indicator 1), thus *directly contributing in quantifying and qualifying forest areas as a first step to enable the concession*. At state level, with the exception of Rio de Janeiro and Santa Catarina, where NFI results have been used to identify priority preservation areas (RJ) and areas and guidelines for sustainable use (SC), it still was not possible to identify other evidence for this indicator (Indicator 2). Biodiversity, carbon

stock and carbon flow indicators were surveyed in 45.2 percent of the Brazilian territory (384.5 million ha). Systematic monitoring shall occur in the near future, when conglomerates are measured again. This is currently being done only in the State of Santa Catarina (Indicators 3 and 4).

Finding 15. Result 1.[5] There is progress towards a national framework for monitoring and evaluating forest resources and land use. However, it is not possible to state that this environment is currently established and operational. The sharing of compatible information on forest resources by relevant institutions at national and subnational level happens through various instances and through project implementation partnerships; national and international partnerships are being planned for the consolidation of the national structure. There are several reported uses of NFM&AS results for strategic decision-making, biodiversity monitoring and carbon stocks, among others, and the methodologies are accepted and shared by several actors.

149. Several articulations, some of which are still in the initial stages (drafting of protocols and methodologies), show that there is progress towards a national (and even international, considering the Amazon biome) framework for monitoring and evaluation of the use of forest and land resources. However, this environment is not yet currently established nor operational. *The establishment and full operation of the framework is clearly envisioned within BFS as a target to be achieved.* However, a *functioning national framework* implies that its components/members actively contribute to the identification and implementation of quality information about the country's forests, which was *not yet identified as already installed in Brazil*. As for sharing compatible information about forest resources by relevant organs at national and subnational levels (indicator 1.1), several relevant institutions in the forest sector such as BFS, Embrapa, UFPR, INPE, UFPA (and FAO itself), as well as state environment secretariats, universities and herbariums, have actively engaged in the process of building a national system for monitoring and evaluation of forest resources and land use. Institutions gathered in a national technical consultation committee, and some states assembled their own committees (e.g. Parana, Ceará, Santa Catarina and Pernambuco) and held meetings throughout the NFI process.
150. Seven specific thematic committees were also created and gathered as needed; moreover, during the Symposia, there was intense information exchange among participants.
151. Under the Project, BFS has also articulated several partnerships to build a national framework. These articulations include institutions/systems like IBGE -which will use NFI data to inform environmental forest accounts; CAR - which will use NFI stock data to make decisions about environmental reserve quotas and payment for environmental services; ICMBio - which will use the methodology in the monitoring of CUs; CAF - which

[5] "National framework for forest resource and land monitoring and assessment (including biodiversity and carbon in forests), analysis and strategic decision-making is established and operating".

will use the NFI methodology to inventory urban areas; Reflora, Sibbr, Specieslink and CNC flora - which include species data in their systems/registers; GT REDD + - which will usebiomass and carbon data; the University of Campina Grande and the University of Brasilia - research based on NFI data; Sisgen/Ministry of Environment – which will use NFI data to indicate priority areas for the implementation of genetic heritage policies; and a FIP project focused on macaúba (tree). These articulations are mostly in the stage of definition of protocols and agreements for operationalization (with the exception of ICMBio and the species identification data, as previously informed).

152. The Project also contributes, from the Brazilian experience, with an international link for the harmonization of NFI with inventories of other Amazon biome countries, such as Peru, Ecuador and Suriname (Panamazon), and the harmonization of NFI with other FRAs in the region. Both initiatives are supported by FAO.

153. In addition to thematic committee meetings, there was an intense sharing of information among herbaria, by hiring consultants specialized in the identification of species, and sending copies of all fertile samples to the IJBR. Sending all sterile samples to UFRA is also planned. Herbaria also received equipment and material (e.g. digitalization equipment). With this, the botanical information is already available on widely accessible online platforms. As a result, the Project contributed to strengthening the entire country's herbariums.

154. NFI was widely disseminated to a diverse public, through 4 National Symposia organized by the project, and participation in 7 international events and other 11 national events with participants from the private sector, forestry companies, academia and the government.

155. In addition, NFI promoted a greater integration and tackling of the resistance of some forestry and botany professionals, through the participation of botany professionals in these events and the participation of BFS in botany conferences (which, according to one respondent, had not happened in over 30 years).

156. With regard to the *development of data of high value forest areas* (Indicator 1.2), in Ceará, SEMACE has used NFI information (species, forest coverage, stocks) together with other tools (e.g. Forest Law) to inform forest management decisions, such as authorizations for forest suppression and reforestation.

157. At the national level, ICMBio integrated the NFI methodology in its Sampling Stations for the biodiversity monitoring within the Forest component of the Monitora's Land sub-programme. ICMBio is responsible for managing all conservation unites in National Forests. The adoption of this unified methodology not only allows the monitoring of biodiversity, but also of carbon stocks and the contribution to climate change mitigation.

158. In relation to the *use for biodiversity monitoring* (Indicator 1.2), the National Flora Preservation Center (CNC-Flora), which carries out the risk assessment of species

threatened with extinction and publishes the threatened species list in Brazil, *used NFI data to re-classify the risk of approximately 90 species,* after new data collection visits to the places of occurrence. In addition, IJBRJ and the other herbariums that concluded the plant identification and digitalization processes, have been inputting data of the fertile samples already identified in the Reflora and SiBBR databases. In addition, they are providing information from their archives at Specieslink, a real-time information distribution system that integrates data from national and international collections in real time (http://www.splink.org.br/index).

159. *Information produced by NFM&AS was already used for strategic decision-making* in at least two states Iindicator 1.3.): in Santa Catarina, a *working group drafted guidelines for the State Forest Policy. The guidelines, based on NFI, were approved by the State Council of Environment (CONSEMA)* and are being turned into concrete measures (e.g. a normative instruction) for productive cultivation and for preservation and management of secondary forests (through a Forest Management State Committee created in 2015).

160. In Rio de Janeiro, *NFI results were used to create five conservation units at state level.* At national level, the BFS Forest Monitoring and Auditing Executive Management (GEMAF) uses NFI information and methodology as input to *draft technical studies for forest concession*, such as in the Anauá (RR) National Forest (Flona) concession process.

161. A *methodology for the monitoring and estimate of carbon stocks in forests integrates NFI's methodology* (Indicator 1.4.), and was *recognized as valid* by all stakeholders participating in the process, once the Collective Agreements had been signed. These protocols were used in the 24 states, 1 municipality and 1 Indigenous Land where data collection has been carried out. However, it is not possible to affirm that states and municipalities are using the methodology for other purposes than NFI. At federal level*, ICMBio uses the NFI methodology to monitor carbon and biomass stocks in Federal conservation units*, as previously mentioned.

Finding 16. Result 2.[6] At least 640 professionals from companies and OEMAs were directly trained by the Project. The training met the country's needs and NFI data collection was carried out with the desired quality. About 70 botanical consultants were trained, and over 40 companies have been abilitated to perform NFI data collection. Data collection, landscape analysis and training methodologies have been continuously improved.

162. Regarding *training in forest resource assessment and monitoring* (Indicator 2.1*), at least 640 professionals were directly trained by Project 079* to carry out field data collection (including socio-environmental study), plant identification, quality control and geospatial analysis methods. Dozens of other professionals involved in NFI work, such as undergraduate and graduate students and technical data collection and herbarium

[6] "BFS and partners have the capacity to collect and analyse information about forest resources and influence development policies more effectively"

teams, were indirectly trained through knowledge transfer by directly trained professionals. 11 members of the Environment State Secretariat are among the trained professionals.

163. The *training corresponded to the country's needs* and, as a consequence, *data collection was carried out with desired NFI quality*. Informants considered the training to be extremely necessary to build the teams' capacity as the Field Manual alone is not enough.

164. It is *unanimous* among *informants that Project 079 was of utmost importance for capacity building in the forest and botanical sectors*, as a consequence of the training and knowledge received during data collection and processing of botanical samples. The Project built capacity of new professionals and prepared them for other opportunities.

165. In the botanical field, about 70 consultants who worked with plant identification had great capacity gains by being exposed to a great amount of samples, and also to the knowledge of several specialists who travelled around the country to identify species.

166. By *participating in the selection processes, over 40 companies abilitated*[7] *to work with NFI were formed or qualified*. Of these, 13 effectively provided services through 41 contracts. Abilitated companies, although not granted with contracts, are now better qualified and can use knowledge to provide various types of services in the forest area, such as other inventories and management system designs.

167. In addition, one company that performed data collection for NFI *improved the quality of its inventory forms based on the NFI models*, and *changed its data collection methods* (e.g., adopted the magnetic aligning of parcels) to facilitate forest management monitoring processes. The project also *expanded EMBRAPA's area of expertise* for the landscape theme.

168. The several *methodologies developed during the Project have been continuously improved*, placing the country in the *forefront of tropical forest resource assessment*. (Indicator 2.2)

169. Through several technical meetings and an intense consultative process involving professionals from several countries, and especially Brazilian experts, the following were developed, tested and improved throughout the Project:

    i. Data collection methodology (including plant collection, measuring and socio-environmental data collection) and a field manual, including soil collection protocol.

    ii. Specific methodologies for data collection in mangrove and planted forests. The field methodologies were tested in several biomes, and much as the training

[7] In the Brazilian procurement system, habilitation is one of the first steps to be able to provide services for the government. It includes the submission and review of the company documentation regarding several aspects including compliance with labour and fiscal legislation. Only after the habilitation is granted can a company be considered in the selection process, when technical aspects and price will be assessed, among others.

courses and manuals were fed with information from capacity building and quality control.

iii. Methodologies for the training of professionals and for training of trainers.The capacity building methodology was adjusted throughout the process and is currently consolidated and efficient. However, up to the present moment, there has been no improvement of the methodology(and manual) considering the data collection errors identified during the analysis process.

iv. Methodology and manual for quality control.

v. Methodology for landscape analysis and quality control of landscape analysis, and corresponding manuals. The methodology for landscape analysis was developed, consolidated and applied in 395 Landscape Sampling Unit (Pampa, Atlantic Forest and Caatinga) with the calculation of indexes, and three manuals were elaborated. The integration between landscape analysis and NFI field data, however, is not yet clearly defined and needs to be improved.

vi. Allometric equations for Caatinga and Atlantic Forest (finalized) and Cerrado (in progress).

170. The development of these methodologies greatly benefited from exchanges with key-actors in the forest sector in Brazil and in the world, as described in Result 1 above.

171. The *use of the skills by stakeholders trained to influence development policies (Indicator 2.3)* was reported in Result 1 above. It is noteworthy that the advances achieved by the States of Santa Catarina and Rio de Janeiro, the use of data in the State of Ceará, the integration with the Monitora programme (ICMBio), the use of BFS and the articulations being carried out, aim at a national framework.

Finding 17. Result 3.[8] Overall, the data collected in NFI is of good quality and relevant. There is new and important information regarding i) forest cover and quality; ii) carbon stock and volume; iii) occupation and use of forest resources (socio-environmental information); and iv) species diversity in biomes. NFI results have already been used in international fora and documents such as the FRA 2020 and the standardization of inventories from the Amazon and Mesoamerica and the Caribbean. However, data have not yet been made available to the states. Not all results have been published tet and the format is not accessible to all uses. There is interest in accessing data at various formats and levels, but many have not yet been entered into the NFI system.

172. In general, there is consensus among respondents regarding the good quality of NFI data collected, and the information is considered relevant (Indicator 3.1.), as previously reported. The methodology provides a good potential for generating new knowledge which needs to be further explored.

173. In the case of *biodiversity* (botanical information), due to the methodology (which

[8] "Information about forest resources and land use and cover is improved and widely used by clients at the national and local levels and for reporting to international fora".

includes sterile samples and in smaller quantities than a traditional botanic collection), NFI probably underestimates the diversity of species in the biomes. This was reported, for example, in the Atlantic Forest biome. New occurrences of species were reported in all biomes (e.g. in Rio de Janeiro, a species that had not been collected since the 1800s; in Santa Catarina, species considered extinct were identified), in addition to the occurrence of rare species. Analyses are being performed to confirm the potential identification of 20 new species and 2 new genera. Additionally, i) there are biomes, such as the Amazon, where the most heavily forested part has not yet been included in the NFI; ii) the identification of already collected samples has not yet been completed in at least two biomes; and iii) in three states the NFI process is just starting. Despite the large number of sterile samples, herbarium considers that the degree of confidence in species identification for most states was good.

174. NFI contributed with *new and important information* about forest resources within states, such as volume, forest quality and carbon stocks. NFI approach follows international standards, thus including non-forest areas to provide a baseline regarding land use and coverage. However, some respondents consider that the samples in non-forest areas make the process more expensive and slower, and generate results of little interest. In the Caatinga biome, NFI may have underestimated the stock by not considering trees lower than 5 cm and carrying out few parcels for trees lower than 10 cm. In the Atlantic Forest (PR), it is considered that the NFI has added important knowledge (e.g. about the growth of natural forests) to complement and systematically qualify what was already carried out in the state (mapping).

175. *Socio-environmental information,* which portrays the reality of rural dwellers and their relationship with forests, is important and innovative, differentiating NFI from other countries' inventories. The companies' teams were trained to conduct social and environmental survey interviews, and results are considered reliable by BFS. Nevertheless, this stage received less attention and importance from the data collection teams, and there are reports on the lack of ability of some professionals who performed interviews. Some methodological aspects can still be improved (e.g. sample selection, application of questionnaires, crossing of information).

176. In spite of the overall positive evaluation, results are still not really known and disseminated, and the main format/means of dissemination at the moment (the state report) is considered to be "not very relevant" by the consultants and managers interviewed, since the document contains more general information and is geared to a lay audience. Therefore, it is not very useful for the drafting and monitoring of plants management to subsidize other inventories or for general decision-making. BFS recognizes this limitation and points out that the analysis had to be initiated based on a few key-indicators, and that there is great potential and interest in carrying out other analyses so that the data may be better used and made available in different formats

and levels. There are already several ongoing initiatives on this matter.

177. On the other hand, the state level *tableau* panels available on the NFI website provide technical data for each conglomerate and more complete information (compared to the reports). However, the degree of information availability varies widely on a case-by-case basis, and options for filtering or parsing sets are still limited.

178. NFI results have been used to inform FRA 2020, and are being shared in initiatives such as the standardization of inventories of the Amazon and Mesoamerica and the Caribbean (Indicator 3.3) reported above. They have also been shared by both BFS and partners (such as EMBRAPA) at international forestry events, including the four National Symposia organized in 2012, 2013, 2014 and 2016. Symposium presentations are available online.

179. Other identified cases of using NFI-generated information to develop policies, projects and plans to date have been reported in Outcome 1 above. (Indicator 3.2)

180. In general, there is greater interest and desire for the free availability of raw data or data analysed in different formats and levels (e.g. coordinates of sampling points, diversity studies, geographical distribution). To date, although included in the signed technical agreements, data are not yet available to the states where NFI was finalized, except for Santa Catarina (whose data have not yet been entered in the BFS system). One manager reported having requested data from his state more than once, with no response. On the other hand, BFS reports that it has been meeting specific data requests when they are justified by the applicants (for example, an Institute in PR has requested species location information to base the establishment of a seed bank for reforestation projects and restoration of riparian forests), but not all requests can be granted, especially when they are very comprehensive. In addition, the system is not yet 100 percent finalized and operational as it is still being refined and tested.

181. Lastly, it is also necessary to consider that the broad publicizing of Brazil's forest resources is critical (and guaranteed by the Information Access Law), especially so that the citizens may be informed and educated about it and that they may exercise the role of monitoring the government and public policies, be it directly or through civil society organizations.

182. The table below shows the views of the main contents of the NFI website in 2018. The number of accesses during 2018 - especially of the results page - shows that NFI results are already attracting some attention, but there is potential to reach a wider audience.

Table 6: NFI website (visualizations)

Website/ page	Visualization (total number)
NFI	**13 853**
Methodology	**2 783**
Progress	**1 460**
Results	**2 228**
Projects in support of NFI	**531**

Symposium	**742**
Total	**21. 97**

Source: "Statistical website NFI 2018" spreadsheet provided by the Project's Management. Figures do not include access to sub-pages of these pages, disclosure of notices or NFI news.

Finding 18. Knowledge products. The Project produced several products and events to share and consolidate knowledge needed to advance the country towards NFM&AS

183. The following knowledge products were produced within the scope of the Project:

i. field manual, including soil collection protocol;
ii. quality control manual;
iii. landscape analysis and landscape analysis quality control manuals;
iv. reports with NFI results by state, Mangueirinha IL and the city of Caçador;
v. an NFI interactive website with methodology, progress and results information.

184. The four National Symposia included other actors in the process, contributed to increased knowledge, sparked interest for research with NFI data, and promoted integration between forest and botanical areas. Committees, both national and thematic, integrated by experts, and exchanges with international experts contributed directly and critically to the development of NFI methodologies (e.g. landscape analysis) and, consequently, field manuals, landscape analysis, quality control and other products.

185. These documents were improved throughout the Project and consolidate knowledge specifically developed for the biomes of the Brazilian territory. They should be used in the next phases of NFI (adaptations required). Manuals content are of recognized good quality but they don't dismiss the need for adequate training, particularly for field data collection.

186. The Project hired a communication consultant who produced various promotional materials, among other works. The table below shows the number of views of the videos available online in their various versions (as of May 2019).

Table 7: Views on the videos produced by the project

Video	Publication date	Views
National Forest Inventory - Knowing to Conserving	17 January 2019	842
National Forest Inventory	21 December 2018	87
National Forest Inventory (subtitled in Spanish)	12 March 2019	19
National Forest Inventory (subtitled in English)	12 March 2019	27
National Forest Inventory - Knowing to Conserving	12 March 2019	35
National Forest Inventory - Knowing to Conserving (extended version)	10 April 2019	140

Source: https://www.youtube.com/watch?v=Vz92TLC4ReM&index=2&list=PLV1gW1Sb0AdGntCv95hU2dUO9xEYh9vGB&t=10s (accessed on 10.05.2019)

Finding 19. Result 4.[9] There is evidence of use and influence of NFI results for biodiversity

[9] "Biodiversity conservation, sustainable forest management and climate change adaptation/mitigation measures are mainstreamed into policies, plans and practices in relevant sectors at the national and subnational levels".

conservation, forest management and climate change adaptation/mitigation initiatives. There are still no clear advancements in the productive sector or in policies and plans to adapt to climate change. National and international initiatives and partners contributed to and benefited from the GEF-FAO Project, such as the European Union, FAO, EMBRAPA, FIP, the Amazon Fund and other GEF projects (Monitora, CNC Flora, GATI etc).

187. As reported above (Result 1), there is already evidence of use and influence of NFI results in various initiatives and practices, and there are several articulations for future integration. However, this initial evidence does not indicate clear advances in the productive sector (Indicator 4.1.) or plans to adapt to climate change (Indicator 4.2).

188. Among the cases reported above, there is integration of NFI data towards conserving biodiversity, forest management and climate change adaptation/mitigation in:

i. ICMBio: NFI composes a broader methodology for monitoring biodiversity (Monitora) (biodiversity).
ii. National Centre for the Preservation of the Flora (CNC-Flora): use of NFI data for risk assessment of threatened species (biodiversity).
iii. SEMACE: use of information for decision-making and monitoring (management).
iv. SC: Guidelines for the State Forest Policy elaborated and being converted into concrete measures (management).
v. RJ: creation of five preservation units at state level (biodiversity/management).
vi. BFS: GEMAF prepare technical studies for forest concessions, such as in the process of the Anauá (RR) National Forest (Flona) concession (management).
vii. BFS: "River Planters" Program: BFS initiative began in 2017 (highlighted during COP23) to connect landowners in rural areas to those interested in recovering and preserving river springs.[10] Such initiative was influenced by the results of NFI's socio-environmental studies.(climate change).

189. In order to obtain project results, there were contributions from national and international initiatives, such as other projects funded by GEF, Amazon Fund and FIP Cerrado. The Project also contributed to instigating or expanding new initiatives and, in some cases, its results have been integrated into such initiatives.

190. For the development of the *landscape methodology*, there was also important financing from the European Union (JRC Projects and sectorial dialogues) and FAO (UIFRA), in addition to financing from the Brazilian National Treasure (through BFS) and from EMBRAPA's own resources (EMBRAPA integrated NFI in its planning through two internal projects). This initiative of BFS in partnership with EMBRAPA Forests included

[10] According to a news article, "in order to create the program, the Ministry of Environment relied on the socio-environmental research carried out by the National Forest inventory (NFI). They show that the population recognizes the link between forest and water production. Over 70% of interviewees replied that the forest's main environmental role is water production and the protection of springs". Source: https://noticias.ambientebrasil.com.br/clipping/2017/06/06/137073-ministerio-lanca-programa-plantadores-de-rios.html Another news article reports that "River Planters was one of eight global initiatives invited to participate in the "Innovations for Sustainable Development Goals and Climate Action", promoted by the Organization of the United Nations during COP 23". Source: http://www.ufla.br/dcom/2017/11/16/car-e-plantadores-de-rios-sao-destaques-no- espaco-brasil-da-cop-23/.

intense exchanges with international experts and the development of two master's dissertations. EMBRAPA is currently developing the application of landscape indexes (such as environmental degradation risk maps, quality assessment of riparian zones and fragmentation and connectivity) for a better connection between landscape methodology and field data.

191. The Symposia also benefitted from the European Union's financing and the EUROAP project.

192. Regarding biodiversity, in addition to the contribution to strengthening Specieslink (http://www.splink.org.br), there is important integration with the following GEF-funded projects:

i. National Center for the Conservation of Flora (CNC-Flora) (threatened species classification).
ii. Reflora: project contributed with the station for the digitalization of the catalogue - there are 70 partner herbariums and over 700 taxonomists involved.
iii. SIBBR (information service on Brazilian biodiversity): offered training for using photographic equipment in the herbariums.
iv. Monitora Project (GEF - ICMBio): in addition to integrating the NFI methodology into the Monitora project, as aforementioned, ICMBio used NFI data to prove conservation effectiveness, thus obtaining a continuity of financing for the ARPA (protected areas) program.
v. GATI - GEF: carrying out of the first National Forest Inventory in Indigenous Land (Mangueirinha IL) resulted from a partnership with the GEF GATI project.

193. In addition, SC submitted to the World Bank a project proposal that includes the forest dimension within actions in three state regions geared to pilot areas for productive cultivation and for the conservation and management of secondary forest, based on the guidelines formulated by NFI. The proposal is currently being analysed.

3.8. Sustainability

EQ7. To what extent has the project created ownership among counterparts and stakeholders?
EQ8. How sustainable are the results achieved at environmental, social and financial levels?

Finding 20. Sustainability. The gains in knowledge of biodiversity and forest resources (in their various aspects) and the capacity gains of the various actors are consolidated and sustainable. Partners are interested in continuing to implement NFI. There is capacity to execute NFI in BFS, in companies and herbaria, but adjustments in the methods and in NFI execution model are essential for greater efficiency. There are doubts about project capacity to maintain itself in the long-term without external funding and support, due to budget cuts. There are also doubts about the states protagonism in the future.

194. Project ownership by partners and others involved, and the reasons for greater or lesser involvement were previously detailed. In short, the states in which there was co-financing have taken more ownership of the process. For example, in the States of Rio

de Janeiro,[11] Santa Catarina, Parana and Ceará the process was more alive and present; in Santa Catarina where the second cycle has already started and is being led by the Regional University of Blumenau Foundation - FURB, which has been producing research with NFI data; in Ceará the information generated by NFI is being used by SEMACE, and in Paraná, even though the NFI coordinator in the State Environment Secretariat has recently retired, the engagement of state actors in the Committee (institutionalized through a resolution) generated a sense of ownership of the process that remains in the Secretariat and within other state actors, such as EMBRAPA Florestas.

195. There is clear ownership of the process also by the herbaria interviewed. For example, IJBR was a protagonist in the process as it is a national and international reference herbarium; IJBR holds the copies of all samples collected and identified by NFI in the country. Other examples are the herbaria of the University of Brasilia and, in particular, of UFRA, in Pará. UFRA considers the future (planned) custody of NFI sterile samples collected in the country as a great asset for research and teaching. These institutions consider themselves as part of NFI and show interest in its continuity.

196. As a close partner, EMBRAPA also expresses ownership of the Project and recognizes itself as an active contributor for its results. It also recognizes the strengthening generated by the Project at national and international level, in addition to the inauguration of a new research area (landscape). The EMBRAPA offices (CPATU, Forests and Cenargen) involved have internalized NFI in the form of internal projects, having fundraised to develop aspects not financed by the GEF project, and actively promote NFI's dissemination in technical meetings, internal communication instruments and in events such as seminars, workshops and the NFI symposia.

197. It is possible to infer, from the aforementioned examples, that ownership of the process was stronger when the partner institution was already reasonably strong and/or when it could envision, since the early stages, the benefits that the Project could bring. However, the Project seems to have had little influence in stimulating an ownership process by organizations that were not strong at its beginning or that do not see, up to the present moment, significant gains in participating in the process.

198. The involvement of universities and civil society organizations in NFI has already been explained above.

199. As previously detailed, the project generated countless advances in terms of capacity and knowledge gains in the environmental, social and economic fields.

200. In relation to the *sustainability of results in the environmental field*, the gain in terms of biodiversity knowledge and forest resources, considering the surveys and analyses already concluded, is currently consolidated.

201. As the plants identification process is concluded, the new species archives of the

[11] It was not possible to interview that representative of the State of Rio de Janeiro for this evaluation.

herbariums are made available in public and online data banks such as SiBBR, Reflora and Specieslink. Its sustainability depends on the maintenance of these online databases and on the herbaria permanence, which is very likely. Herbaria have enough equipment and material to maintain the physical archives, and given its existence previous to the project, knowledge shall be preserved.

202. The same may be said for knowledge of other aspects of the Brazilian forest resources. Once the field collection and the data analyses are concluded for all states, this knowledge shall remain, depending on the availability of data in the NFI system in accordance with the access policy that needs to be elaborated. Nevertheless, this data might lose relevance if it not used and periodically updated.

203. With regard to *social and economic advances*, there is no doubt that the capacity gains remain in the country and that this generates positive effects. The managers of companies and herbaria inform that the teams hired had other opportunities of work and study directly linked to the significant capacity gains, and that the Project subsidized the creation of several new forestry companies, which had the opportunity to structure themselves, learn and gain experience. The Project also qualified locals in the several biomes, who can keep on working in the region providing services in the forest sector. In one large company, at least six high-level educated professionals were hired after the conclusion of the Project in offices throughout the country.

204. So far it has not been possible, nor has it been the purpose of this evaluation, to quantify the social and economic gains of the Project beyond what is described above.

205. An important aspect in relation to sustainability is the *interest, ability and feasibility of the partners to keep on implementing NFI*.

206. *Interest* is manifested by all respondents (which relates to the analysis of relevance presented above). Be it in a second round - in areas where the field work has been completed - or in cases where the territory has not been entirely covered yet (Amazon biome), a second cycle is considered important as there is still a lot more to explore. Ceará, for example, studies the inclusion of NFI indicators of vegetation coverage and deforestation in the "CE 2050" development project.

207. However, for all the reasons already mentioned in this document, there are doubts about the capacity of certain states taking on a more central role in the next NFI rounds. The continuity of the project demands a proactive attitude by BSF along with the state governments, for example articulating NFI's insertion in the states' Pluriannual Plans, so as to guarantee project continuity.

208. The state committees were not very active in the first round and need to be reformulated. The potential changes in state governments for political reasons (e.g. elections) also need attention, considering that they foresee a possibile interruption of the Project. This risk became clear when visiting the states where information about the Project was lost in the changes in the government; even in states that are more involved,

there is the risk of "archiving" NFI as it is considered a "concluded" project (which denotes a lack of understanding of NFI and its uses).

209. In this sense, workshops are suggested to present the Project's potential as an attempt to assist the states in assembling forest policy strategies. Several partners interviewed also pointed out the need to change the methodology to guarantee NFI's continuity. Increase in the size of the samples, in the measuring criterion and in the rhythm of data collection are some of the suggestions. These were consolidated and may be found in Annex II. The fact that several suggestions are being made is a sign that confirms interest in the continuity and improvement of NFI.

210. FUNAI also identifies, at first, a possible interest by other Indigenous Lands in carrying out inventories, but it believes it to be unlikely that there will be interest from indigenous people living in the Amazon. In any case, it considers the management of this process to be successful, and believes it could be an incentive to inquire about the interest of other indigenous population, in particular in the South, Southeast and Northeast regions.

211. Finally, there is no doubt about BFS' interest in continuing to lead the process, be it on the part of the project's coordinator or from the BFS Direction (see section 3.9 below).

212. In terms of *capacity:* in order to keep carrying out the plant identification, herbaria understand that a more continuous and regular process would be more productive, instead of a concentrated effort. In spite of the difficulty in identifying sterile samples, there is a positive response to the type of collection carried out by NFI, unlike the traditional botanical collection.[12] However, greater control over the quality of data collection and more collection time are considered necessary to increase the quality of the samples. The permanent herbaria teams, generally small, have the technical capacity to coordinate the plant identification in a second phase, but hiring a team (as was done in the Project) and financial support are considered essential, especially for University herbaria.

213. About the capacity of the companies for the Project's continuity, finding companies with adequate capacity to carry out the Inventory would probably be a less strenuous process today. In addition to it already being a methodology the companies are now familiar with the number of companies has increased and many professionals are already trained. New training and refreshment will certainly be necessary, including adjustments in the methodology by the end of the analyses and of the data insertion into the NFI system. Training and refreshment is already provided by BFS as an integral part of the process for each NFI cycle.

214. BFS has the capacity to continue leading the process. Permanent staff have already taken ownership of the administrative processes, and the fact that the IT system was

[12] Traditional botanical collection by herbaria always includes fertile samples and a substantially higher number of exemplars is collected (compared with what was collected for NFI), according to informants.

internally developed contributes to its sustainability. Coordination has sought to incentive employees to identify NFI areas in which they have interest so that they can increase ownership of the process. However, the amount of professionals necessary to implement NFI is also a concern. For example, the trainers responsible for quality control do not belong to the BFS staff, and even though ten people have been trained (Training of Trainers), the core team of trainers remained small during project implementation (three-four professionals).

215. There is still not enough technical capacity to carry out NFI in the states, with a few exceptions (SC, for example). This is due to the previously exposed issues, in spite of permanent state staff having participated in the training and, in some cases, accompanied the quality control. One of the greatest challenges is guaranteeing that the methodology is identically applied throughout the national territory. This generated a necessity for BFS to take over the coordination and training in its headquarters in a centralized manner. However, this also makes it more difficult for the states to create autonomy in implementing NFI in the future. BFS has the legal mandate to coordinate the process and to guarantee a unified adoption of the methodology,[13] while it builds states capacities to perform quality control, select companies, increase the sampling density, etc.

216. *Financing may be the most critical point regarding the sustainability of results of Project 079, notably of NFI*. For the aforementioned reasons, there are doubts about the capacity of NFI to sustain itself in the long-run without external funding, especially with regard to data collection. The budget cuts imposed by the Ceiling Amendment present an additional challenge, since even external financing may be submitted to this rule, depending on who manages the resources. In this regards, the model adopted in this Project (resources administered directly by FAO and not internalized in the BFS budget) was extremely important to guarantee the implementation of the several project components, and it would be very valuable to advance towards a 100 percent sustainable forest information system. However, it currently seems unlikely for an NFI "second cycle " to take place without external financing (conclusion of the collection in states not yet covered and a second collection in the states already covered).

3.9. Progress towards impact

EQ12. To what extent is the project likely to contribute to informed-based policymaking?

Finding 21. Progress towards impact. NFI (main project result) has the potential to contribute to informed-based policymaking, but there is still little evidence of decision-making examples

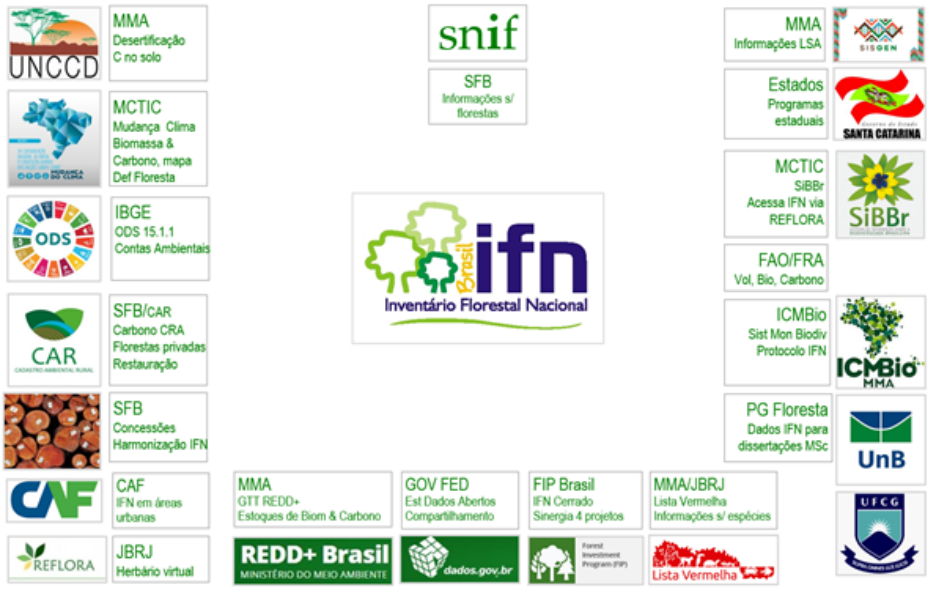
[13] According to Law nº 12.651, of 25 May 2012 ("Codigo Florestal"): "Art. 71 – The Union, along with states, Federal District and Municipalities will execute the National Forest Inventory to subsidise the analysis of existence and quality of the country's forest, in public and private lands.
Parágrafo único. The Union will establish criteria and mechanisms to uniformize the collection, maintenance and update of the IFN information."

that may be attributed to the project. The lack of availability of data to the States may put at risk the future use of information generated in the Project to formulate public policies, since the NFI system has not yet been completed and part of the data collected have not yet been entered.

217. There is no doubt about *NFI`s huge potential to contribute to informed-based policymaking*. This is recognized by all direct and indirect partners, and by the potential users of NFI information. Existing evidence of decision-making regarding sustainable forest development that can be attributed to the Project and potential uses and synergies identified towards an effective system. Information and monitoring (NFM&AS) have been reported earlier in this document (in particular in section 3.7 above)

218. The following synergies board presented by BFS demonstrates the diversity of interactions and potential NFI contributions to other existing initiatives (MMA, MCTIC, ICMBio, IBGE, universities, states, and FRA):

Figure 2: NFI synergy with other national agendas



219. To date, there has been little dissemination of NFI results and, therefore, there is not much evidence of policies based on its results. There are several demands for data, which require availability of time and resources on the part of BFS, and which hinder the advancing of the data analysis and the availability of results from all states that have concluded the field work.

220. The Project Document provided for the establishment of an Effectiveness Promotion Committee (EPC) to support the implementation of a project effectiveness promotion plan, in particular of Component 4.[14] Some of the duties of this committee were carried

[14] For a broader outreach, the project will count with an Effectiveness Promotion Committee dedicated to

out, such as the seminars and media follow-up. However, the Committee was not formally established. It is not possible to objectively measure whether and how the absence of this instance may have impacted the dissemination of results and its application and articulation for public policies, in particular because the results are not yet fully available.

221. The following boxes present NFI's main potential contributions (some of them already reported in this document) and a summary of the uses reported up to the present moment.

Table 8: Key potential contributions of NFI

• Reference on forest resources for the country. The previous reference was RADAM (1970s); there are isolated references in certain states; e.g. UNDP/FAO in the Northeast.
• Unified methodology for the country and correlated initiatives allowing comparison and dialogue between initiatives.
• Knowledge on biodiversity.
• Inform priority-setting in terms of preservation.
• Inform the design of strategies for the sustainable use of forest resources.
• Subsidy to support and adjust the Atlantic Rainforest Law and Resolution 5 of the National Environment Council (stages of succession).
• Support to the forest productive sector with the provision of quality information.
• Reference for territorial planning, PSA, water grants, etc.
• Basis for defining the cutting cycle for areas under sustained forest management (mainly from NFI sequenced results - every five years).
• Inform the design and implementation of CUs management plans in units where NFI was done (with ICMBio).
• NFI in National Forests (stocks) and in forest use concessions; a limitation is the grid of 20 x 20 km, but densification may be carried out. NFI also provides a first portrait of the forest users that the concessions must take into account.
• Vegetation maps.
• Inform international reports (e.g. FRA).

Table 9: Evidence of use of NFI

Prominent cases of use of NFI for the definition of policies are:
• SC: The NFI has been used as basis for the forest state policy. The results are presented yearly in the Environment State Council. In 2015 there was the creation of the Forest Management State Council to define guidelines for productive cultivation and for the conservation and management of secondary forests. This generated a project proposal submitted to the World Bank (in analysis). A normative instruction for the management of secondary forests is also underway.
• RJ: use of NFI results to define areas for the creation of CUs. In addition, the plant species identified within NFI are available in the main online databases (Specieslink, Reflora, Brazil Flora), and are thus being

identifying and recommending activities to increase the impact of the project's outputs and outcomes, including an annual forest policy seminar to discuss the results of ten policy studies each year, realization of surveys of project clients, monitoring of the use of information and analyses generated by the project in the media and in academic works, etc (Source: ProDoc, p. 41).

used in the same way as the other data; they are already of public domain

Use of NFI at smaller scale:

- The volume calculation formula in the Cerrado was adopted by Water Resources and Environment Institute of the Federal District (IBRAM) after NFI.
- Public Prosecution Office in the State of Rio Grande do Sul.
- Private companies in the State of Ceará use the NFI as reference for other work (e.g. licensing).
- In the State of Piauí, the public environmental agency requires the adoption of the NFI methodology, but has not transformed it into a norm (only the criterion of the inclusion limit DAP > 10 cm)
- In the State of Ceará: the environmental agency uses NFI data as a reference for authorization of tree removal and analysis of processes. NFI results are a reference for issuing technical opinions, in addition to other tools.
- FRA 2020 based on NFI data.
- Public call for projects to recover water resources (both in the preparation of the public call and duirng its implementation) based on NFI results (River Planters Project).
- Mangueirinha IL: NFI's objective was to subsidize and prove biodiversity conservation efforts to ensure the maintenance of ecological ICMS (tax) and for territorial security reasons.

222. A possible challenge that could put at risk the future use of the results/information generated from the Project in the formulation of public policies is the lack of devolution of NFI data to the states. The NFI system has not yet been completed and a lot of data that was collected has not yet been entered. Even for states where the analytical report has already been published, the data has not yet been sent, and there has been no follow-up of the articulations focused on the use and application of NFI results in each state. In general, there seems to have been a lack of interaction with the states after the conclusion of data collection, and so far there is little expectation that NFI will be used by the states to define policies.

223. This situation seems to be related to two realities observed:

i. lack of time and focus from the states, universities and civil society (which was not involved in the project) to take ownership of NFI and think strategically based on NFI results;

ii. BFS' lack of operational capacity to implement this articulation of use and application of results due to the lack of human resources and time, considering that the fieldwork has been prioritized.

224. In view of this, there is the risk of remaining in the vicious circle of 'without provocation or demand there is no articulation' and 'without articulation there is no demand'.

225. There is clarity, by BFS, of its role as NFSM&AS coordinator and protagonist. BFS is also a respected and recognized articulator in the national context. For this reason, it should also be the main articulator for the use and application of NFI results.

226. Guaranteeing an easy, quick and consistent availability of access to data and results is a strategy that may facilitate this articulation without additional efforts. In order to do

so, there is a consensus about the need to define a data access policy (or strategy). Interface should be easy and operational, allowing Brazilian citizens to access the data, considering that this is a legal determination (Information Access Law).

227. This policy should establish different levels of access depending on the data uses and users. For certain uses (for example, connected to biodiversity), access to raw data and coordination may be necessary. For other uses, more or less aggregated and pre-analysed data might be enough.

228. There is also no doubt that the data made available should be consistent and, to that end, it is important that the system be carefully developed. The development of this system is currently underway under the supervision of BFS.

229. Finally, there is an agreement about the importance of making the data available to states for definition of policies (and for contribution with other data, feeding the system), and to the universities and research institutions, which can contribute to research and analyses that shall also be integrated in the system. Some informants consider it important to have control, for example, over the methodology applied in research using NFI data. However, this vision is not shared by most of the respondents.

230. There are still those who understand that BFS has more of a technical and less of a political character, and that for better articulation and promotion of the use of the NFI system for the definition of policies, it would be necessary to count on support from ministries. It is important to note that BFS became part of the Ministry of Agriculture, Livestock and Food Supply in 2019, and is no longer part of the Ministry of Environment. In March 2019, the current BFS Director declared that NFI was a priority in the Institution's agenda, which is encouraging in terms of sustainability of the process. It is also worth noting that NFI is foreseen in the Brazilian Forest Code (Law No 12,651/2012), which generates for the government the obligation to execute it.

231. However, for the promotion of its use in the definition of policies, an articulation between the Ministry of Agriculture, Livestock and Food Supply and the Ministry of Environment and between the Ministry of Agriculture/BFS and the State Secretariats of Environment is necessary, considering that the institutions responsible for forest management at state level (agencies such as Ideflor-Bio in Pará) are still connected to environmental secretariats.

232. NFI is considered by many as a technical instrument, which guarantees, to a certain degree, its permanence and the incentive for its periodic execution, as is provided for by the law. However, the use of information for defining sustainable management policies, in accordance with the Social Development Goals and towards the fulfilling of the other international commitments undertaken by the country regarding climate change and biodiversity, shall strongly depend on the criteria, parameters and procedures adopted by the policymaking agencies (federal, state and municipal governments).

233. Lastly, to promote NFI as a national strategy, the design of a strategy to monitor the uses and impact of NFI results in the different spheres (federal, state, municipality, civil society, public policies) will be necessary.

4. Conclusions and recommendations

4.1. Conclusions

Conclusion 1. Project objectives and its results remained relevant over the years to both national and international priorities on the sustainable management of forest resources.

234. Prior to Project 079, Brazil did not have quality and homogeneous information about its forest resources. The availability of this type of information will not only allow the reporting at both national and international levels (e.g. FRA), but will also subsidize the formulation of appropriate policies and guidelines on sustainable management and use of forest resources. This importance shall remain valid in the future as reflected by the Native Vegetation Protection Law.

Conclusion 2. Both the design of the project and the active institutional participation followed a logical sequence that directly contributed to the achievement of the final goal.

235. The components that were initially planned for the implementation of Project 079 followed a logical flow, as follows: i) construction of a conducive institutional environment; ii) definition of the methodology, and capacity building of the different institutions involved; iii) NFI implementation in the field, and production of quality information; and iv) dissemination and application of the results for defining policies and programmes on sustainable management and use of forest resources. Project 079 foresaw and sought the involvement of strategic partners and institutions to reach its goals, even though these partnerships were not always successful.

Conclusion 3. The project was quite successful with regard to the achievement of Components 2 and 3. However the implementation and dissemination of NFI results was not fully satisfactory and, therefore, had little impact on the definition of public policies and the promotion of sustainable management and use of forest resources.

236. The project was very successful in capacity building (Component 2) and in data collection in the field (Component 3), even though it covered only 45 percent of the national territory (of the expected 100 percent). However, the establishment of NFM&AS (Component 3) and the application of NFI results in public policies (Component 4) were not very expressive. These would be the components with the greatest strategic impact.

Conclusion 4. The project promoted an important rapprochement between the forest sector and herbariums.

237. This unprecedented rapprochement is fundamental to qualify the information generated by the NFI, and to validate its results for wider by different sectors on sustainable use and conservation of biodiversity, environmental preservation, forest concession, threatened and invasive species, among others.

Conclusion 5. Despite the efforts, institutional articulation at state level was uneven. States where there was co-financing presented superior involvement. Insufficient interest

and commitment from some states hindered the achievement of a greater institutional articulation.

238. The task of articulating 26 states (and the federal district), as well as several federal and state institutions is admittedly complex, and depends on institutional and professional/personal commitments and priorities. It would consequently require special efforts with specific dedication of resources (human resources and, especially, time). While some states played a leading role, other states had little involvement. The project failed to develop a strategy to address this challenge.

Conclusion 6. An intense preparation phase with the participation of strategic partners, and with FAO's fundamental contribution, was the basis for the positive performance of the project.

239. NFI in Brazil has been prepared since 2005 with a wide participation of institutions and high-level professionals in the country. FAO has, in the same way, made itself present through several initiatives and by supporting discussions. These were fundamental steps for the success of Project 079, which involved the development and adjustment of methodologies in almost every aspect (planning, implementation, capacity building, articulation, etc.).

Conclusion 7. The permanence of BFS' core and institutional staff throughout the project implementation period, across three different governments, was crucial to the success of the project.

240. From the preparatory phase until the end of its implementation, there was little change in the project management and in the NFI core team at national level (GEINF). Even though there were changes in the technical team, which is hardly avoidable in the public sector, the leadership sphere remained stable, and ensured the continuity of strategies and priorities carried out with professional expertise.

Conclusion 8. Due to factors outside project control (e.g. spending cuts), it was not possible to articulate most of the planned and available co-financing. On the other hand, unanticipated co-financing contributed to the project.

241. The dependence of the project in reaching its goals is greatly due to co-financing (GEF contribution represented only 13.5 percent of the total budget). Even though this is completely justifiable in a country such as Brazil, it has resulted in a negative effect due to delays and/or the lack of resources availability. Therefore, the project was unable to reach its entire goals (45 percent of the 100 percent of the country inventoried), regardless of will or technical capacity. On the other hand, the strategy of raising other types of co-financing was very positive, and these resources were responsible for a significant part of NFI results.

Conclusion 9. Processes related to feedback, correction of directions and enforcement of corrective measures were insufficient. Therefore, some problems in the implementation of the project's strategic actions were not tackled (e.g. articulation in the states, production and application of results).

242. The M&E system implemented by Project 079 followed the basic and traditional

international project procedures, mainly focused on reporting of advances, adjustments, difficulties and coping strategies. There was an annual monitoring process led by FAO headquarters and a mid-term evaluation. Throughout this process, the evaluation team observed the repetition of recommendations (mainly focused on Component 4) that were not implemented. In the absence of corrective measures, some difficulties remained until the end of the project (e.g. articulation in the states, production and application of results). Although the challenges for producing and applying NFI results were partly due to situations over which Project 079 had little control, the non-correction of these aspects had a significant negative effect on its results.

One concrete case of negative impact due to an unresolved operation problem.

The development of the data storage and processing system (IT system) went through a series of difficulties and complicated phases. The delay in the operationalization of this system prevented from reaching NFI results in the states, which directly impacted Component 4 of the Project - use and application of NFI to promote the sustainable management of forest resources - leading to a reduction of the general impact of the project and, consequently, to a less favourable evaluation.

Conclusion 10. Project direct and indirect partners acknowledge the leadership role of BFS, and FAO's contribution to the NFI. They also confirm their commitment to its future continuity.

243. The protagonist role played by BFS and the technical contribution provided by FAO are recognized by the partners involved in Project 079 as a critical condition for the success and continuity of NFI. This institutional context certifies the results, and is fundamental for the credibility and validation of NFI, and for its application to public policies. In this same context, these partners also confirm their commitment to collaborating with the initiative in the future, reflecting the project's positive engagement with stakeholders.

Conclusion 11. The project installed significant capacities in the country on aspects related to NFI.

244. When establishing a uniform methodology and guaranteeing an integrated capacity on aspects connected to NFI (e.g. manuals, field surveys, plant collection and identification, landscape analysis, among others), Project 079 strengthened the capacities of most of the partners involved. BFS, herbariums, Embrapa, private companies and some state agencies benefitted from these activities. This effort generated an installed capacity in the country for the continuity of NFI.

Conclusion 12. Even if foreseen in law, NFI's medium- and long-term sustainability is uncertain due to its dependence on political priorities, both at federal and state level, and on external financing.

245. There is no certainty of the guarantee and sustainability of NFI, neither for the

implementation of field surveys nor with regard to the application of quality information in the definition of public policies and programmes. They depend on political priorities both at national and state level, which also results in uncertainty about their funding. NFI's provision in Brazilian Law is an important step, but it does not guarantee the continuity of its execution.

Conclusion 13. The project is responsible for important advances in the provision of quality technical information on national forest resources (e.g. biodiversity, biomass and carbon stocks, socio-environmental role of forests etc.).

246. The project was able to implement and consolidate a standardized forest inventory model at national level through an intense learning process, and with the approval of the different partners and stakeholders. The special effort made in terms of prioritizing capacity building activities and data collection was strategic and contributed to an unprecedented level of qualified knowledge.

4.2. Recommendations

Recommendation 1. To FAO. In case of development/implementation of similar activities, the allocation of human and financial resources to the different components must consider the skills, roles and competencies needed to perform each type of task. This is fundamental when planning to act in different fronts such as technical information survey (field NFI), institutional articulation of distinct spheres and actors (federal and state institutions, research institutions, etc.) and definition of public policies (at federal and state levels).

Recommendation 2. To GEF and the Brazilian Forest Service. Given the current set of laws, future activities in the country should avoid incorporating international funds into national financial management systems or to seek legal exemption of these resources from the application of restrictive orders on the use of public funds in order to ensure their application in project activities.

Recommendation 3. To FAO and the Brazilian Forest Service. In order to ensure the continuity of NFI, the BFS, with support from FAO, should:

i. carry out strategic discussions with all states or state commissions on the implementation of NFI as well as on the results obtained and their applicability;
ii. reassess, along with relevant sectors, the feasibility of carrying out NFI in the country on a five-year basis and the possible impacts of its execution on a ten-year basis;
iii. qualify the selection process of providers to guarantee adequate and necessary skills and competencies, weighing technical quality against price;
iv. strengthen the original role of NFI's Quality Control.

Recommendation 4. To the Brazilian Forest Service. In order to ensure a large and comprehensive use of NFI results, BFS should:

i. finalize and implement NFI data access policy as soon as possible, and implement NFI data storage and processing system (IT system);
ii. completes the first NFI cycle in the entire country by mobilizing the available co-financing resources.

Recommendation 5. To FAO. In case of future similar activities, FAO should ensure the

planning and implementation of a monitoring system with the provision of regular feedback, and the implementation of corrective measures from the beginning of the intervention.

Recommendation 6. To the BFS and FAO. Carry out concrete short-term actions to demonstrate the usefulness and necessity of NFI for federal and state governments in order to enhance the sustainable use of forest resources, and to continue guaranteeing NFI's continuity in the country.

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Appendix 1. People interviewed

	Name	Surname	Position	Organization/local
19	Gracie	Abad Maximiano	Secretaria de Estado do MA e RH/PA	SEMA – PR/ Curitiba - PR
30	José Antônio	Aleixo da Silva	Professor Doutor e Pesquisador	UFRPE - Departamento de Eng. Florestal/ Recife - PE
29	Jorge	Alves da Silveira Junior	Diretor da DGMUC	Escritório Ideflor-Bio/ Belém - Pará
13	Doádi	Antônio Brena	Consultor (Capacitação e controle de qualidade)	FAO/BFS - Projeto NFI/Porto Alegre - RS
50	Rita	Araújo Pereira	Curadora do Herbário	IPA - Herbário/Recife - PE
48	Pedro	B. da Silva Neto	Coordenador do NGEO (Núcleo de Geotecnologias)	Escritório Ideflor-Bio/ Belém - Pará
43	Maria Regina	Barbosa	Professora e curadora do Herbário JPB	UFPB - Herbário JPB/ João Pessoa - PB
9	Carolyn	Barnes Proença	Professora Titular; Curadora do Herbário	Herbário - UnB/ Brasília-DF
42	Maria Iracema	Bezerra Loiola	Professora e Curadora do Herbário	Herbário Prisco Bezerra - UFC/ Fortaleza-CE
6	Anne	Branthomme	LTO - FAO - FOM	Sede FAO/Roma (Itália)
38	Marcello	Broggio	Oficial de Programa	Escritório FAO/ Brasília-DF
5	Andrei	Camargo Duarte	Coordenação Geral de Gestão Ambiental	CGGAM - FUNAI/ Brasília-DF
49	Rafaela	Campostrini Forzza	Curadora do Herbário	Instituto Jardim Botânico do Rio de Janeiro / Rio de Janeiro - RJ
16	Felipe	Carlos Pereira de Almeida	Sócio - proprietário	Escritório Nordeste Reflore Consultora Ambiental/ João Pessoa - PB
55	Walmir	Carneiro Corumbá	Coordenador de Gestão Florestal	Secretaria de Meio Ambiente do Pará - SEMAS / Belém - Pará
53	Valéria	Carvalho	Coordenação Geral de Gestão Ambiental	CGGAM - FUNAI/Brasília-DF
33	José Humberto	Chaves	Gerência Executiva de Monitoramento e Auditoria Florestal	Escritório BFS/ Brasília-DF
4	Alexander	Christian Vibrans	Professor Doutor e Pesquisador	Universidade Regional de Blumenau - FURB/Florianóplis - SC
18	Gracialda	Costa Ferreira	Professora Doutora; Curadora do Herbário	UFRA - Universidade Federal Rural da Amazônia/ Belém - Pará
26	Isabelly	da Silva Lima	Analista Ambiental	Escritório Terra Consultoria Ambienta/ Fortaleza-CE
41	Maria Augusta	Doetzer Rosot	Pesquisadora - desenvolvimento de metodologia do NFI	Embrapa Florestas - Laboratório de Monitoramento Ambiental/ Curitiba - PR
47	Patrícia	Ferreira Tavares	Diretoria de Conservação da Biodiversidade	Escritório SEMAS/ Recife - PE

	Name	Surname	Position	Organization/local
39	Marcelo	Fragomeni Simon	Resposável NFI	Embrapa - Cenargem/ Brasília-DF
1	Adirson	Freitas dos Reis Junior	Diretor da Diretoria Florestal Semace	Escritório SEMACE/Fortaleza-CE
11	Cristina	Galvão Alves	Gerente Executiva de Fomento e Inclusão Florestal	Escritório BFS/ Brasília-DF
25	Ikallo	George Nunes Henriques	Técnico da empresa	Escritório Nordeste Reflore Consultora Ambiental/João Pessoa - PB
44	Mariana	Gomes Rabello Motta	Consultora do NFI	Herbário - UnB/ Brasília-DF
54	Victor Hugo	Holanda Oliveira	Analista Ambiental	Escritório Terra Consultoria Ambienta/Fortaleza-CE
17	Fernanda	Ilkiu Borges de Souza	Pesquisadora da Embrapa Amazônia Oriental; Curadora do Herbário	Embrapa CPATU (Amazônia Oriental)/Belém - Pará
21	Gustavo	Kauark Chianca	Representante-Assistente	Escritório FAO/ Brasília-DF
15	Felipe	Lago	Sócio Ecotech Ambiental	Escritório Ecotech Ambiental/ Brasília-DF
32	José Geraldo	Lopes de Souza	Analista Ambienta	Escritório Ibama/Fortaleza-CE
20	Guilherme	Luis A. Gomide	(ex)-Consultor (Capacitação e controle de qualidade)	FAO-BR/São Paulo - SP
56	Yeda Maria	Malheiros de Oliveira	Pesquisadora - desenvolvimento de metodologia do NFI	Embrapa Florestas - Laboratório de Monitoramento Ambiental/Curitiba - PR
37	Leila	Maria Bandeira da Silva Miranda	Analista de Projetos Ambientais	Escritório SEMAS/ Recife - PE
23	Gustavo	Martinelli	Coordenador do CNC – GEF	Instituto Jardim Botânico do Rio de Janeiro / Rio de Janeiro - RJ
10	Claudia Maria	Mello Rosa	Gerente Executiva do NFI	Escritório BFS/ Brasília-DF
3	Aguimar	Mendes Ferreira	Diretor de Operações	Escritório - STCP Engenharia de Projetos/ Curitiba - PR
8	Carlos Alberto	Mendes Junior	Superintendente SEMACE	Escritório SEMACE/Fortaleza-CE
35	Julio Cesar	Meyer Junior	Diretor da DGFLOP	Escritório Ideflor-Bio/ Belém - Pará
7	Carlos	Moreira de Souza Junior	Pesquisador Sênior	Escritório Imazon/ Belém - Pará
24	Humberto	Navarro de Mesquita Junior	Gerência Executiva de Informação Florestal	Escritório BFS/ Brasília-DF
45	Marli	Pires Morim	Pesquisadora - Coordenadora dos consultores	Instituto Jardim Botânico do Rio de Janeiro /Rio de Janeiro - RJ
52	Thiago	Queiroz	Gerente de Operações	Escritório FAO/ Brasília-DF
12	Dalton	Raphael Ruy Secco	Pesquisador	Escritório Imazon/ Belém - Pará
40	Marcus	Ribeiro Barreto	GEF Focal point	Ministério da Economia/ Brasília-

	Name	Surname	Position	Organization/local
	Cesar			DF
2	Adriana Luiza	Ribeiro de Oliveira	Consultora do NFI	Herbário - UnB/ Brasília-DF
31	José Enilcio	Rocha Collares	Sócio (empresa encerrada)	Transtema Consultoria/ Rio de Janeiro - RJ
46	Natália	Rodrigues Bijos	Técnica do Herbário	Herbário - UnB/ Brasília-DF
14	Eliseu	Rossato Toniolo	Engenheiro Florestal	Escritório Geophoto/Fortaleza-CE
22	Gustavo	Stancioli Campos de Pinho	Gerente do Projeto BRA 079 - NFI	Escritório BFS/ Brasília-DF
51	Sarah	Sued Gomes de Souza	Professora	Herbário Prisco Bezerra - UFC/ Fortaleza-CE
36	Katia	Torres Ribeiro	Coordenadora Geral de Pesquisa e Monitoramento da Biodiversidade	ICMBio/ Brasília-DF
28	Joberto	Veloso de Freitas	Diretor de Pesquisa e Informações Florestais; Coordenador do NFI	Escritório BFS/ Brasília-DF
27	Itaragil	Venâncio Marinho	Representante da Secretária do Estado	SEIRHMA/ João Pessoa - PB
34	José Tadeu	Weidlich Motta	Curador do Herbário	Museu Botânico Municipal de Curitiba/ Curitiba - PR

Appendix 2. Theory of Change

Narrative

1. In 2010, Brazil concentrated 12 percent of the world's biodiversity, 3.6 million km^2 of the Amazon Forest and housed about 20 percent of the above soil carbon stocks in the country.
2. Brazil socially and economically depends on its natural resources; that is why it is important to maintain high quality forests and other natural resources.
3. In spite of this, Brazilian forests and biodiversity are being affected by the expansion of agriculture and pastures (conversion), devastating fires and the absence of policies and measures geared to preservation. These factors contribute to high deforestation rates which result in carbon emissions estimated at 952Tg per year, corresponding to 92 percent of the carbon emissions in the country
4. Over the last decade, Brazil has made efforts to improve its forest resources management and to make it more participatory, including the creation of the Brazilian Forest Service (BFS) in 2006 (regulated in 2007), the National Forests Program (PNF) and policies such as the National Agrarian Reform Policy, the National Family Farming Program (PRONAF) and the Forest PRONAF.
5. Nevertheless, the availability of relevant information on the sector is still limited, which makes decision-making difficult at national level. Policymaking, strategic planning and the definition of long-term national plans and programmes for the sustainable management of forest resources in Brazil (and the monitoring of its implementing) have been insufficient, mainly due to a lack of quality knowledge to foster rational and robust decision-making about land use.
6. The country's institutional capacities for monitoring forest resources in a territory of continental proportions with important regional differences and six different biomes (Cerdado, Caatinga, Atlantic Forest, Amazon Forest, Pampa and Pantanal) are equally limited.
7. The Brazilian Federal Government and the state Governments have expressed interest, through environmental organizations, in developing and implementing a system that produces trustworthy, systematic, comprehensive and in-depth knowledge about the use and preservation of sustainable resources, aiming at the country's sustainable development.

Premises

8. Given the above considerations, Project 079 was designed based on the following premises:
    i. there is a sustained political and public commitment in Brazil to change and adopt policies in the land use sectors to reflect biodiversity, MFS and climate change objectives;

ii. government institutions (national and subnational) have the ability to influence forest management and forest conversion through policies and plans resulting from the project (i.e. political and institutional factors outside the project's control do not change in a way that adversely affects project objectives);

iii. incentive structures outside the project's control do not adversely affect investment decisions (or at least no more than at the time of project preparation); and

iv. strategic decision-making is based on a robust and impartial analysis of data and information on forest resources.

9. Based on these premises, the BRA 079 project was designed with four main components, which aim to respond to the abovementioned challenges.

10. First, creating a favourable environment is necessary to place sustainable land management at the centre of the development of policies and practices by creating a national framework for monitoring and evaluating forest resources and for strategic decision-making. This environment is developed through institutional partnerships, consultations and the adhesion of states and communities (Component 1).

11. It is also necessary to increase the Brazilian actors' capacity to manage this system through technical management support and special training for forest inventory activities (Component 2).

12. As these first two pillars become established, it is also necessary to establish a baseline information and monitoring system on forest resources and land use and coverage. This system aims to provide reliable national level knowledge that is systematic, comprehensive and in-depth regarding forest resources, its management, use and users. This is done through tree measuring activities, collection of plant, soil and socioeconomic data, and data analysis (Component 3).

<u>With regard to the adhesion of key actors:</u>

13. Once the system is being implemented at national level, incorporated as a long-term programme, and the social actors involved are able to monitor forest resources and produce quality information, making it available throughout the national territory (results of components 1, 2, and 3)

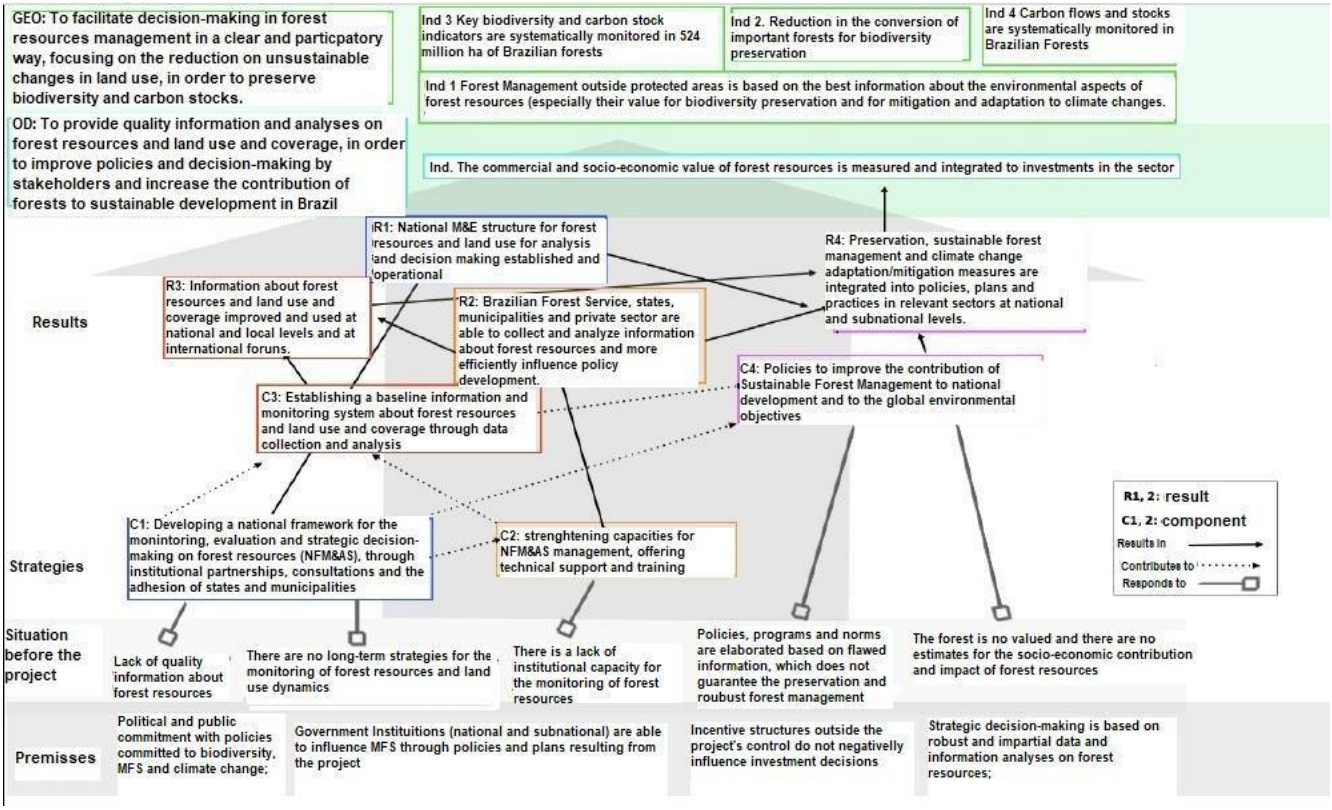
14. Governments and other social actors can move on to using the data in a systematic way in decision-making and in the definition of policies, practices and standards for sustainable forest management and adequate land use, with a view to national development and global environmental benefits (Component 4).

15. The knowledge about forest resources provided by the National Forest Inventory (NFI) will allow Brazilian social actors to measure the commercial and socioeconomic value of forest resources to integrate them into investments in the sector, thus contributing to the country's Sustainable Development Goals.

16. Finally, the use of NFI data allows for:

i. the planning and execution of forest policies and the elaboration of integrated forest and land use plans that are wise, participatory and democratic;
ii. the balancing of environmental concerns with national development objectives;
iii. the verification of the positive impacts of sustainable forest management on the conservation of biodiversity and carbon stocks (Global Environmental Objective);
iv. the definition and implementation of strategies to prevent the degradation and fragmentation of forests caused by the expansion of agribusiness, also contributing to the preservation of biodiversity and the maintenance of carbon stocks (Global Environmental Objective);
v. the monitoring of biodiversity and carbon stock indicators (Global Environmental Objective);
vi. the adoption of approaches to facilitate access to carbon financing mechanisms (Global Environmental Objective).

Figure 1. Graphic representation of the Theory of Change



Appendix 3. GEF Rating Scheme

PROJECT RESULTS AND OUTCOMES

Project outcomes are rated based on the extent to which project objectives were achieved. A six-point rating scale is used to assess overall outcomes:

Rating	***Description***
Highly Satisfactory (HS)	*"Level of outcomes achieved clearly exceeds expectations and/or there were no shortcomings."*
Satisfactory (S)	*"Level of outcomes achieved was as expected and/or there were no or minor shortcomings."*
Moderately Satisfactory (MS)	*"Level of outcomes achieved more or less as expected and/or there were moderate shortcomings."*
Moderately Unsatisfactory (MU)	*"Level of outcomes achieved somewhat lower than expected and/or there were significant shortcomings."*
Unsatisfactory (U)	*"Level of outcomes achieved substantially lower than expected and/or there were major shortcomings."*
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.*

During project implementation, the results framework of some projects may have been modified. In cases where modifications in the project impact, outcomes and outputs have not scaled down their overall scope, the evaluator should assess outcome achievements based on the revised results framework. In instances where the scope of the project objectives and outcomes has been scaled down, the magnitude of and necessity for downscaling is taken into account and despite achievement of results as per the revised results framework, where appropriate, a lower outcome effectiveness rating may be given.

PROJECT IMPLEMENTATION AND EXECUTION

Quality of implementation and of execution will be rated separately. Quality of implementation pertains to the role and responsibilities discharged by the GEF Agencies that have direct access to GEF resources. Quality of Execution pertains to the roles and responsibilities discharged by the country or regional counterparts that received GEF funds from the GEF Agencies and executed the funded activities on ground. The performance will be rated on a six-point scale:

PROJECT IMPLEMENTATION AND EXECUTION

Rating	***Description***
Highly Satisfactory (HS)	*There were no shortcomings and quality of **implementation** or **execution** exceeded expectations.*
Satisfactory (S)	*There were no or minor shortcomings and quality of **implementation** or **execution** meets expectations.*
Moderately Satisfactory (MS)	*There were some shortcomings and quality of **implementation** or **execution** more or less meets expectations.*
Moderately Unsatisfactory (MU)	*There were significant shortcomings and quality of **implementation** or **execution** somewhat lower than expected.*
Unsatisfactory (U)	*There were major shortcomings and quality of implementation substantially lower than expected.*

Rating	***Description***
Highly Unsatisfactory (HU)	*There were severe shortcomings in quality of **implementation** or **execution**.*
Unable to Assess (UA)	*The available information does not allow an assessment of the quality of **implementation** or **execution**.*

MONITORING AND EVALUATION

Quality of project M&E will be assessed in terms of:

- design
- implementation

SUSTAINABILITY

Sustainability will be assessed taking into account the risks related to financial, sociopolitical, institutional and environmental sustainability of project outcomes. The evaluator may also take other risks into account that may affect sustainability. The overall sustainability will be assessed using a four-point scale:

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

Appendix 4. GEF evaluation criteria rating table

1) RELEVANCE		
Overall relevance of the project	MS	The initial relevance of the project is maintained from the beginning and is projected for the future; the relevance of the Global Development and Environmental Objectives is maintained; the design of the project and the Theory of Change were improved to achieve the objectives.
2) ACHIEVEMENT OF PROJECT RESULTS (EFFECTIVENESS)		
Overall assessment of project results	MS	The results were achieved in 3 of the 4 objectives. However, Results 1 and 3 were only partially achieved; data use and dissemination is still incipient (Result 4).
Result 1 - NFM&AS	S	Efficient articulation of agreements; Technical Committee and Technical Councils have been effective; appropriate institutional arrangements; pilot tests in 1 municipality and Indigenous Land (IL) were successful.
Result 2- Capacity Building	S	Methodologies and manuals developed and consolidated; successful strengthening of herbariums; pilot tests in 1 municipality and IL were successful; 644 people trained, 19 herbariums strengthened.
Result 3 - Baseline and Information System	S	Reports from 8 states and frameworks from 12 states; NFI performed fully in 17 states + Federal District, partially in 6 states and not performed in 3 states.
Result 4 - Support to Policy Reform	MU	Dissemination through reports, websites and symposia; weak articulation of public policies in the various spheres; delay in the availability of data.
3) PROJECT EFFICIENCY, IMPLEMENTATION AND EXECUTION		
Overall quality of project implementation and adaptive management (implementing agency)	S	Adequate financial implementation; good local and headquarters technical assistance; agility and feasibility of contracts, resources, etc.
Quality of execution (executing agencies)	S	A significant articulation effort was made; great methodology and capacity building efforts; great data systematizing and analysis efforts with non-controllable external factors; reduced public policies effort.
Efficiency (including cost effectiveness and timeliness)	MS	Delay in the schedule; difficulties in enabling co-financing; project extension allowed better achievement of the targets; the impact of the reduction of NFI's cost via companies is not guaranteed.
4) MONITORING AND EVALUATION		
Overall quality of M&E	MS	The project did not have a *specific* M&E system. Plan and consultancy were not carried out. Reporting and MTR performed efficiently. MTR recommendations partly complied with.
M&E design at project start-up	S	M&E programmed according to the regular implementation of FAO-GEF Projects. Consultancy foreseen and drafting of an M&E plan.

M&E plan implementation	MS	The project did not have a specific M&E system. Plan and consultancy were not carried out. Standard Report and MTR efficiently carried out. MTR recommendations partly complied with.
5) SUSTAINABILITY		
Overall sustainability	ML	The GEINF's operational structure is limited. The availability of NFI resources is not guaranteed and is difficult. NFI is foreseen in the Forest Law and is a priority activity for the current BFS Board. The current context of environmental policy in Brazil is confusing.
6) STAKEHOLDER ENGAGEMENT		
Overall quality of stakeholder engagement	MS	Partners were engaged in the project and NFI and expressed interest and commitment regarding post-project activities (future phases). The quality of partner engagement varied and depended on the level of BFS articulation (sometimes weak) or the level of partner interest (e.g. states that are not very committed to using the data from the results).