

**Strengthening participatory natural resource management processes for sustainable economic development, conservation of biodiversity and maintenance of carbon stocks in Amazon Wetlands.**

**Part I: Project Information**

**GEF ID**

10706

**Project Type**

FSP

**Type of Trust Fund**

GET

**CBIT/NGI**

☐ CBIT

☐ NGI

**Project Title**

Strengthening participatory natural resource management processes for sustainable economic development, conservation of biodiversity and maintenance of carbon stocks in Amazon Wetlands.

**Countries**

Brazil

**Agency(ies)**

FAO

**Other Executing Partner(s)**

**Executing Partner Type**

**GEF Focal Area**

Biodiversity

**Taxonomy**

Biomes, Mainstreaming, Biodiversity, Protected Areas and Landscapes, Species, Focal Areas, Forest, Sustainable Land Management, Land Degradation, Influencing models, Type of Engagement, Private Sector, Civil Society, Stakeholders, Communications, Gender Mainstreaming, Gender Equality, Gender results areas, Learning, Capacity, Knowledge and Research, Tropical Rain Forests, Mangroves, Wetlands, Lakes, Rivers, Fisheries, Forestry - Including HCVF and REDD+, Infrastructure, Agriculture and agrobiodiversity, Coastal and Marine Protected Areas, Community Based Natural Resource Mngt, Productive Landscapes, Terrestrial Protected Areas, Wildlife for Sustainable Development, Amazon, Food Security, Improved Soil and Water Management Techniques, Sustainable Forest, Sustainable Agriculture, Sustainable Livelihoods, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Demonstrate innovative approach, Convene multi-stakeholder alliances, Partnership, Participation, Consultation, Information Dissemination, Community Based Organization, Non-Governmental Organization, Academia, Beneficiaries, Individuals/Entrepreneurs, Education, Awareness Raising, Indigenous Peoples, Local Communities, Knowledge Generation and Exchange, Access and control over natural resources, Capacity Development, Participation and leadership, Access to benefits and services, Gender-sensitive indicators, Sex-disaggregated indicators, Knowledge Generation, Innovation, Enabling Activities, Knowledge Exchange, Adaptive management, Indicators to measure change

**Rio Markers**

**Climate Change Mitigation**

Climate Change Mitigation 1

**Climate Change Adaptation**

Climate Change Adaptation 1

**Duration**

48 In Months

**Agency Fee(\$)**

324,106.00

**Submission Date**

9/28/2020

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
BD-1-1	GET	1,689,185.00	11,630,000.00
BD-2-7	GET	1,722,459.00	6,832,000.00
Total Project Cost (\$)		3,411,644.00	18,462,000.00

### B. Indicative Project description summary

### Project Objective

To conserve and sustainably use biodiversity and maintain carbon stocks in varzea floodplain forests and mangroves wetlands of Amazonia.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)



1. Strengthening the enabling environment to sustainably manage varzea floodplain forests and mangrove wetlands.	Technical Assistance	<p>1.1. Improved enabling environment enhances the effectiveness of natural resources management</p> <p><b><u>Indicators:</u></b></p> <p><i>- 972,776 ha in 17 protected areas under improved management, measured by METT (Core Indicator 1)</i></p> <p><i>-Number of people benefiting from capacity building programme that actively participate in community-based biodiversity management processes. Target: 5,975 people (3,985 men and 1,990 women) (Core Indicator 11)</i></p> <p><i>- Number of organizations involved in capacity building processes structured and strengthened. Target: 11 organizations</i></p>	<p>1.1.1. Capacity building program for community leaders developed and implemented</p> <p>1.1.2. Local organizations created or strengthened to engage in the sustainable management of natural resources.</p> <p>1.1.3. Community-based management protocols (linked to Protected Area management plans) developed for target resources (i.e. fisheries, caiman, mangrove crab, agroecology, forestry, and community based tourism)</p> <p>1.1.4 Biodiversity monitoring tool developed and adopted by target sites</p>	GET	1,100,185.00	8,850,000.00
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2. Participatory management and sustainable use of protected areas and productive landscapes.	Investment	<p>2.1. Pressure on natural resources is reduced and resilience increased, leading to improved conservation of natural resources and ecosystem functions</p> <p><b><u>Indicators:</u></b></p> <p><i>-33,242 ha of landscapes covering 3 lake complexes (Jurupari Grande, Parana do Jacare, and Seringa) and the Tefe Region under improved management for the benefit of biodiversity (Core Indicator 4.1)</i></p> <p><i>- Population of target species (pirarucu, caiman, and crab) does not decline</i></p> <p><i>- Number of mangrove trees cut down from predatory selective logging activities in the coastal areas of Pará. Target: 10-20% reduction in total number of trees cut down.</i></p>	<p>2.1.1 Implementation of the participatory management plans (Output 1.1.3) including agroforestry, wood and non-wood forest products, pirarucu management, caiman and mangrove crab management, and community-based tourism in 17 protected areas and 4 productive landscapes</p> <p>2.1.2 Improved livelihood opportunities for local communities arising from the adoption of sustainable technologies to strengthen target biodiversity value chains (pirarucu, agroforestry, crab)</p>	GET	1,560,000.00	8,010,000.00
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3. Monitoring and evaluation (M&E) of the impact of knowledge transfer and good practices.	Technical Assistance	3.1 Project implementation is supported by a gender sensitive M&E strategy based on measurable results, on adaptive management principles, and enhanced by access to information including status of biodiversity and its ecosystem benefits to society.	3.1.1 Monitoring and evaluation system developed with relevant project partners and key stakeholders, with clearly defined and verifiable indicators.  3.1.2. Mid-term and annual reviews for project evaluation and alignment of processes carried out.  3.1.3. Lessons learned and best practices disseminated to key stakeholders and the general public.	GET	589,000.00	780,000.00
Sub Total (\$)					3,249,185.00	17,640,000.00
Project Management Cost (PMC)						
GET					162,459.00	822,000.00
Sub Total(\$)					162,459.00	822,000.00
Total Project Cost(\$)					3,411,644.00	18,462,000.00

**C. Indicative sources of Co-financing for the Project by name and by type**

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Ministry of Science, Technology and Innovations (MSTI)	Grant	Investment mobilized	9,600,000.00
Recipient Country Government	National Center for Applied Technologies - Water (MSTI)	Grant	Investment mobilized	2,740,000.00
Others	Federal University	In-kind	Recurrent expenditures	950,000.00
Others	NGO Mamirauá Sustainable Development Institute (infrastructure)	In-kind	Recurrent expenditures	4,000,000.00
Recipient Country Government	Department of Agricultural Development and Fishery of the State of Pará (Sedap)	In-kind	Recurrent expenditures	55,000.00
Recipient Country Government	Chico Mendes Institute for Conservation of Biodiversity (ICMBio)	In-kind	Recurrent expenditures	67,000.00
Recipient Country Government	Chico Mendes Institute for Conservation of Biodiversity (ICMBio)	In-kind	Recurrent expenditures	1,050,000.00
<b>Total Project Cost(\$)</b>				<b>18,462,000.00</b>

**Describe how any "Investment Mobilized" was identified**

Mamirauá Sustainable Development Institute is a private, non-profit, research institute that has a contract with the Ministry of Science, Technology and Innovations. Mamirauá Institute is classified as a Social Organization under Brazilian law 9.637 of May 15 1998. Mamirauá will renew its contract with the government before the end of 2020 for an annual financial support of R\$12,000,000 (approximately US\$ 2,740,000) for the next ten years. Considering the duration of this GEF project (48 months), co-financing from this government source will be approximately US\$ 7,200,000. Co-financing from the National Center for Applied Technologies - Water (NCAT-Water) refers to a project with the Ministry of Science, Technology and Innovations with an investment of R\$14,000,000 (approximately US\$ 2,800,000) in total for the next three years. The activities of this project in partnership with NCAT-Water are well aligned and are complementary to the GEF proposal, and are related to water treatment and distribution for consumption and production in remote areas of Amazonia.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
FAO	GET	Brazil	Biodiversity	BD STAR Allocation	3,411,644	324,106	3,735,750.00
Total GEF Resources(\$)					3,411,644.00	324,106.00	3,735,750.00

E. Project Preparation Grant (PPG)  
PPG Required



PPG Amount (\$)				PPG Agency Fee (\$)			
150,000				14,250			
Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
FAO	GET	Brazil	Biodiversity	BD STAR Allocation	150,000	14,250	164,250.00
Total Project Costs(\$)					150,000.00	14,250.00	164,250.00

Core Indicators

Indicator 1 Terrestrial protected areas created or under improved management for conservation and sustainable use

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
935,606.76	0.00	0.00	0.00

Indicator 1.1 Terrestrial Protected Areas Newly created

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
0.00	0.00	0.00	0.00





Name of the Protected Area	WDPA ID	IUCN Category	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
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Indicator 1.2 Terrestrial Protected Areas Under improved Management effectiveness

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
935,606.76	0.00	0.00	0.00

Name of the Protected Area	WDPA ID	IUCN Category	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)	METT score (Baseline at CEO Endorsement)	METT score (Achieved at MTR)	METT score (Achieved at TE)
Reserva de Desenvolvimento Sustentável Piagaçu-Purus	352136	Protected area with sustainable use of natural resources	504,083.50						
Reserva Extrativista de São João da Ponta	351780	Protected area with sustainable use of natural resources	340.94						



Reserva Extrativista Mãe Grande de Curuçá	351782	Protected area with sustainable use of natural resources	5,061.60	
Reserva Extrativista Chocoaré-Mato Grosso	351822	Protected area with sustainable use of natural resources	278.32	
Reserva Extrativista do Rio Unini	35183	Protected area with sustainable use of natural resources	424,842.40	
Terra Indígena Jaquiri	33867	Others	1,000.00	

Indicator 2 Marine protected areas created or under improved management for conservation and sustainable use

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
37,169.69	0.00	0.00	0.00




#### Indicator 2.1 Marine Protected Areas Newly created





Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
0.00	0.00	0.00	0.00



Name of the Protected Area	WDPA ID	IUCN Category	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
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#### Indicator 2.2 Marine Protected Areas Under improved management effectiveness

Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
37,169.69	0.00	0.00	0.00

Name of the Protected Area	WDPA ID	IUCN Category	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)	METT score (Baseline at CEO Endorsement)	METT score (Achieved at MTR)	METT score (Achieved at TE)
Reserva Extrativista Marinha Cuinarana	555600266	Protected area with sustainable use of natural resources	1,126.82						
Reserva Extrativista Marinha de Araí-Peroba	351798	Protected area with sustainable use of natural resources	1,581.04						
Reserva Extrativista Marinha de Caeté-Taperaçu	351796	Protected area with sustainable use of natural resources	5,681.23						

Reserva Extrativista Marinha de Gurupi-Piriá	351799	Protected area with sustainable use of natural resources	10,571.47	
Reserva Extrativista Marinha de Soure	351783	Protected area with sustainable use of natural resources	4,732.61	
Reserva Extrativista Marinha de Tracuateua	351797	Protected area with sustainable use of natural resources	3,666.36	
Reserva Extrativista Marinha do Maracanã	351781	Protected area with sustainable use of natural resources	4,013.83	

Reserva Extrativista Marinha Mestre Lucindo	555600255	Protected area with sustainable use of natural resources	3,485.16	
Reserva Extrativista Marinha Mocapajuba	555600245	Protected area with sustainable use of natural resources	2,311.17	

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
33242.00	0.00	0.00	0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

33,242.00

Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Indicator 4.4 Area of High Conservation Value Forest (HCVF) loss avoided

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

**Documents (Please upload document(s) that justifies the HCVF)**

Title	Submitted
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Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	1,990			
Male	3,985			
Total	5975	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Core indicators were calculated as follows: Core Indicator 1: Terrestrial protected areas under improved management effectiveness: The project will support the development and implementation community based resource management plans/protocols for forestry, caiman, fisheries, tourism and crab management in the protected areas listed below. The estimated area under improvement is calculated for each protected area. In total, the project is expected to improve management (measured with the METT score) in 935,606 ha of terrestrial protected areas. # ID Ecosystem Mgmt Activities Area TERRESTRIAL PROTECTED AREAS 1 Reserva de Desenvolvimento Sustentável Piagaçu-Purus Varzea Forestry; Caiman 504.083,50 3 Reserva Extrativista do Rio Unini Varzea Fisheries 424.842,40 5 Terra Indígena Jaquiri Varzea Tourism 1.000,00 15 Reserva Extrativista de São João da Ponta Mangrove Crab management 340,94 16 Reserva Extrativista Mãe Grande de Curuçá Mangrove Crab management 5.061,60 17 Reserva Extrativista Chocoaré- Mato Grosso Mangrove Crab management 278,32 Sub-total 935.606,76 Core Indicator 2: Marine Protected Areas under improved management effectiveness: The project will support the development and implementation of community-based resource management plans for the sustainable use of crabs in the nine Marine Extractive Reserves (MER) listed in the table below. The estimated area under improvement is calculated for each protected area. In total, the project is expected to improve management (measured with the METT score) in nearly 37,169 ha of MERs. # ID Ecosystem Mgmt Activities Area MARINE PROTECTED AREAS 18 Reserva Extrativista Marinha de Soure Mangrove Crab management 4.732,61 19 Reserva Extrativista Marinha Mocapajuba Mangrove Crab management 2.311,17 20 Reserva Extrativista Marinha Cuinarana Mangrove Crab management 1.126,82 21 Reserva Extrativista Marinha Mestre Lucindo Mangrove Crab management 3.485,16 22 Reserva Extrativista Marinha do Maracanã Mangrove Crab management 4.013,83 23 Reserva Extrativista Marinha de Tracuateua Mangrove Crab management 3.666,36 24 Reserva Extrativista Marinha de Caeté-Taperaçu Mangrove Crab management 5.681,23 25 Reserva Extrativista Marinha de Araí-Peroba Mangrove Crab management 1.581,04 26 Reserva Extrativista Marinha de Gurupi-Piriá Mangrove Crab management 10.571,47 Sub-total 37.169,69 Core Indicator 3: Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified): The project will support the development and implementation of community-based resource management plans for the sustainable use of fisheries in three lake complexes, namely the Complexo de Lagos Jurupari Grande, the Complexo de Lagos do Paraná do Jacaré (Capivara) and the Complexo de Seringa (Joacaca). The estimated area under improvement management is calculated for each landscape and listed in the table below. In total, the project is expected to improve management in nearly 33,242 ha of productive landscapes. The project is also expected to apply agroforestry practices in the Região de Tefe, but the target impact area will be calculated during the preparation phase. # ID Ecosystem Mgmt Activities Area LANDSCAPES UNDER IMPROVED PRACTICES (excluding protected areas) 27 Complexo de Lagos Jurupari Grande Varzea Fisheries 12.501,74 28 Complexo de Lagos do Paraná do Jacaré (Capivara) Varzea Fisheries 16.284,54 29 Complexo de Seringa (Joacaca) Varzea Fisheries 4.455,72 32 Região de Tefé Varzea Agroforestry NA Sub-total 33.242,00



## **Part II. Project Justification**

### **1a. Project Description**

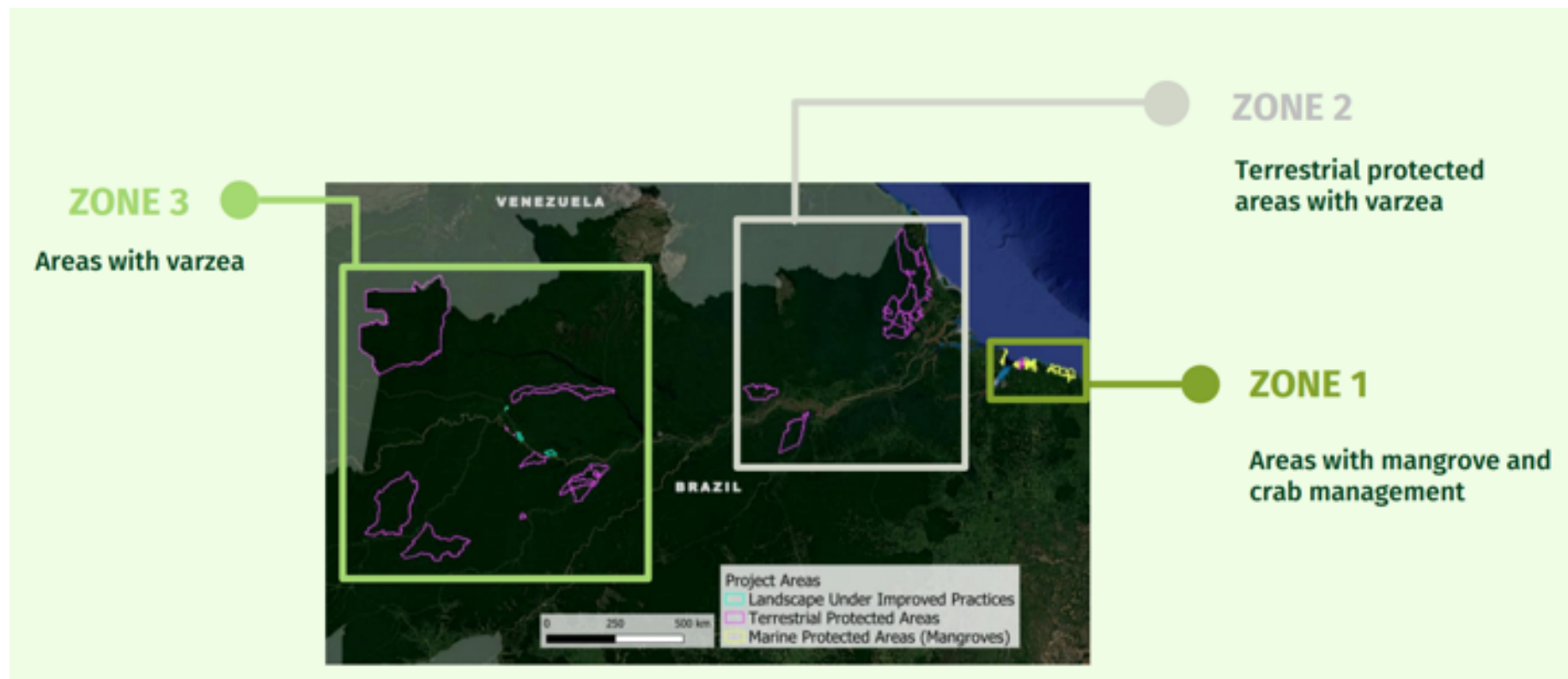
- 1) The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description).

1. **The global environmental problem:** Given that the economy of the Amazon region is highly dependent on the use of natural resources, wetlands suffer high anthropogenic pressure that causes **loss of biodiversity and degradation of varzea floodplain forests along the Amazon river and mangroves in the Southeast coast of the Amazon Biome.**
2. The Amazon Forest hosts 10% of the planet's biodiversity, 20% of the world's freshwater, provides important ecosystem services, stores over 100 billion tons of carbon, and is essential to the livelihood of more than 34 million people<sup>[1]</sup>. Adequate management of this quintessential tropical forest and its biodiversity is critical for the maintenance of global climate and mitigation of impacts from human population growth on environmental sustainability and food security for peoples of the region<sup>[2]</sup>.
3. While the government of Brazil has made significant efforts to protect the Amazon forest by harmonizing ecosystem protection, biodiversity conservation, forest and agriculture production, tensions still exist between growth of local communities and conservation goals. Brazil has made significant gains in establishing environmental legislation and policies<sup>[3]</sup> and setting aside areas that reconcile conservation, development and poverty reduction in order to reduce deforestation. While deforestation rates have reduced significantly,<sup>[4]</sup> rates have shown an increasing tendency since 2010. During 2019, PRODES data showed an estimated deforestation rate close 10,000 square kilometers, boosted by, among others, export markets for agricultural goods, forest goods, minerals and energy and the development of transport infrastructure.<sup>[5]</sup>

#### Target project sites

4. The proposed project will target two types of ecosystems: varzea floodplain forests (hereafter varzea) and mangroves. The most biologically valuable ecoregions of the world were defined by Olson (1998), and both the Varzea and Igapó freshwater ecosystems and the Northeast Brazilian coast marine ecosystems are included in the list.<sup>[6]</sup> The proposed project will work with local communities and indigenous peoples living in or near 26 protected areas and 6 landscapes in the Amazon not covered by the GEF-funded (GEFID 10198) "*Brazil Amazon Sustainable Landscapes Phase 2*" Project currently under preparation. Annex A provides detailed maps for each of the project sites. Annex D presents a list of the target sites by type of ecosystem, their location, the main threats they face and priority activities to be implemented (based on the results from RAPPAM), the types of activities to be implemented and their extension (in hectares). The map below shows the location of the selected sites by type.

Figure 1. Location of target sites by type

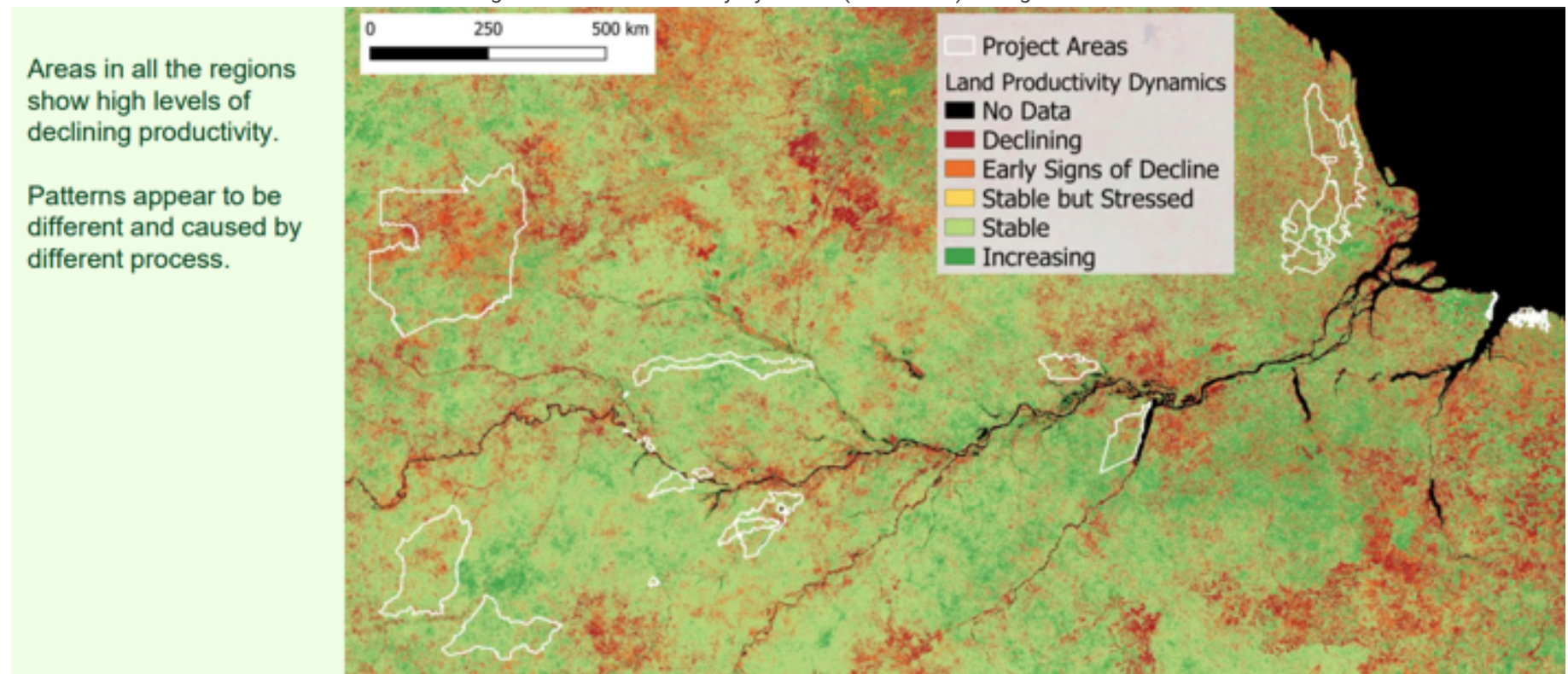


5. FAO and Mamiraua conducted temporal analysis of forest loss using the Hansen Global Forest Cover Product (v 1.7)<sup>[7]</sup> between 2000 and 2019 of the target sites including a 20 km bufferzone delineated to compare state and pressures inside the area and its surroundings. Preliminary results show that approximately 138,193 ha of forest were lost inside the project sites since 2000, of which 54% were lost in the last 5 years (74,442 ha). In contrast to forest loss inside the study areas, the 20 km buffer areas show higher levels of forest loss. The study estimates that nearly 787,205 ha of forest were lost since 2000, of which 38% (297,460 ha) were lost in the last 5 years. The Reserva Extrativista Tapajos-Arapiuns is the project area with the highest level of forest loss inside, most of which happened in 2016 due to forest fires. On the other hand, the Reserva Extrativista Marinha de Tracuateua is the project area with the highest level of forest loss in its surroundings, which increases pressures on the protected area.

6. As shown in figure 1 above, the target sites are divided into three “zones”. Zone 1 includes sites with low forest loss inside and high forest dynamics in the buffer zones. Zone 2 represents areas with significant forest loss pressure both inside and outside the target sites. Finally, Zone 3 represents areas with relatively low forest loss inside and outside. The selected sites and dynamics discussed above will allow the project to test and monitor the impact the project can have .

7. Finally, the project team carried out an assessment of land productivity dynamics (Figure 2) and forest fires. Land productivity dynamics were analyzed using times series of MODIS NDVI (250m) from 2000 to 2019. Fire dynamics were analyzed using data from the Fire information for resource management (FIRMS - NASA) from 2000 to 2020. Results show that all target sites show areas with high levels of declining productivity, though patterns appear to be different and caused by different processes. For instance, in Zone 1 (Coastal zone), land use patterns from the inland side seem to be causing pressures due to high Fire intensity and Forest loss. But at the same time, there is declining productivity on the mangroves, in the shoreline, which is not explained by those causes and which could be related to changes in the ocean condition. In Zone 2, the patterns of declining productivity seem to be more directly linked to human activities, with high Fire intensity concentrated on the edges of protected areas, which sometimes propagate to the inside. Finally, while Zone 3 did not show much forest loss or Fire Intensity, the analysis shows many places with early signs of decline in the productivity. This could be due to human activities that do not produce drastic land cover changes but still have an overall negative effect on the toverall vegetation productivity, exacerbated by negative trends in precipitation in these parts of the Amazon (Trends for Period 1999-2019 using PERSIANN and TRMM datasets).

Figure 2. Land Productivity Dynamics (2000-2019) in target sites



8. Varzea and mangroves are highly productive environments and valuable for biodiversity conservation and maintenance of ecosystem services, but are fragile and difficult to recover once they have been altered by human intervention<sup>[8]</sup>. At the same time, they are among the most imperiled ecosystems of Amazonia suffering high anthropogenic pressure as is also shown by our preliminary analysis for the 2000-2019 period. The pressure from the buffer and

sourrundings areas is generally high in all zones. Being water related ecosystems, this is also a important indicador because the flow of ecosystem services and pollutants is goes mostly downstream from this buffer zones into the target areas. Given the distinct biological characteristics and social contexts of each wetland attended in this project we will describe threats separately for each major ecosystem.

### **Threats to varzea target areas.**

9. The varzea covers 4% of Amazonia and is one of the largest freshwater ecosystems in the world, extending over approximately 300,000 km<sup>2</sup> along the Amazon River and its main tributaries. It is characterized by an annual flood pulse of 10 m, which can last up to 230 days each year. The varzea is one of the most productive ecosystems of Amazonia and an important breeding ground for fish, birds, mammals, and reptiles. In order to grow and survive in this environment, both plants and animals must have a large range of morphological, anatomical, physiological and ethological adaptations.

#### ***Threat 1. Depletion of pirarucu (*Arapaima gigas*) stocks.***

10. The creation of protected areas and technical support from Mamirauá Sustainable Development Institute, hereafter Mamirauá Institute, have allowed adequate management of fisheries and caused the increase and maintenance of fisherie stocks in the varzea inside protected areas. In these areas, not only has biodiversity flourished but fisherman livelihoods have improved significantly. The pirarucu is a great example of this success with populations growing considerably after these interventions (see section 2, for detailed description).

11. At the same time, the creation of protected areas has denied access to natural resources to a large number of stakeholders, mainly fisherman from peripheral communities and urban areas, that were, overnight, forbidden to use resources from inside protected areas and were left unassisted.

12. To survive, this large number of stakeholders have continued their activities as professional fisherman, using fisheries resources in open-access lakes without any technical support and planning. This has resulted in the swift depletion of stocks in these areas, threatening food security of these peripheral communities and putting pressure on biodiversity inside protected areas. In open-access access lakes pirarucu populations can have densities over 100 times smaller than in protected lakes (open-access lakes: 0.002 ind. ha<sup>-1</sup>; protected lakes: 0.294 ind. ha<sup>-1</sup>)<sup>[9]</sup> indicating severe overexploitation.

#### ***Threat 2. Illegal harvesting of caimans.***

13. Uncontrolled harvest of caiman has almost caused local extinction of caiman species in some areas of Amazonia in the recent past, with most populations outside protected areas extremely reduced (Da Silveira; Thorbjarnarson, 1999). The commercial ban on hunting of wildlife in Brazil since 1967, by the Fauna Law (Law No. 5,197), in association with the stricter international trade and the creation of conservation units, has promoted the recovery of some caimain populations previously at risk. However, large-scale illegal caiman hunting still occurs and poses an important threat to these species.

14. Seizures by state and federal agencies indicate the existence of an extensive illegal trade of caiman in the Brazilian Amazon. In addition to hunting for meat supply, caiman are also hunted for use as bait in piracatinga fishing. In 2013 it is estimated that over 2,300 black caiman (*Melanosuchus niger*) were killed for this purpose in Mamirauá Sustainable Development Reserve alone<sup>[10]</sup>.

15. In Amazonas State, most of this illegal harvest comes from Piagaçu-Purus Sustainable Development Reserve with an estimated 37 tons of caiman being commercialized illegally every year<sup>[11]</sup>.

### ***Threat 3. Illegal logging***

16. Illegal logging is considered one of the most important threats to the Amazon Forest. This unplanned and unsustainable harvest has major impacts to forest structure, altering local environmental dynamics and generating fuel that originates or intensifies possible fire outbreaks<sup>[12]</sup>. In the varzea, logging generates and even more damaging effect, given secondary impacts due to the need to remove trees that will be used as buoys to transport harder and denser wood. Due to the low costs of log extraction, displacement and transportation during the flood period, the exploration is concentrated in varzea areas<sup>[13] [14]</sup>.

17. In Piagaçu-Purus Sustainable Development Reserve there are no official forestry management plans and all current logging is illegal, unplanned and unsustainable. Residents of this protected area and peripheral communities harvest wood throughout the year, with higher intensity during the flood period, when the logs can be transported by floatation, via the construction of rafts. Between April and July 2005, 6,805 trees from 67 different species were cut down in this protected area<sup>[15]</sup>.

### **Threats to mangrove target areas**

18. Amazonian coastal mangroves are the inundated land in and around the estuary of the Amazon River in eastern Brazil. Flooding occurs across the landscape twice daily when the ocean tide pushes a large volume of river discharge onto the landscape, elevating water level by 2-3 m. The Amazon Estuary and Mangroves Ramsar Site (Site no. 2337) is located in the Marajó archipelago, the largest fluvial-maritime archipelago on the planet. The site consists of a corridor of 23 protected areas covering over 3.8 million ha in one of the largest continuous mangrove formations in the world with over 8,900 km<sup>2</sup> stretching over 700 km (70% of all the mangroves of Brazil)<sup>[16]</sup>.

19. Mangroves play a key ecological role in maintaining the coastal zone and are essential to the socioeconomics of coastal communities. However, the increase in human occupation around mangrove areas has resulted in overexploitation of important species, such as the white mangrove (*Laguncularia racemosa*) and the uça crab (*Ucides cordatus*).

### ***Threat 4. Unregulated harvest of the white mangrove.***

20. The white mangrove tree is intensely used to build traditional fishing traps (corrals) in the coast of Pará, where commercial and subsistence fishing is crucial for local livelihoods<sup>[17]</sup>. This activity uses thousands of 2-4 cm thick poles cut from white mangrove per trap that need replacement every 6-24 months, which is not enough for the recovery of the harvested areas, resulting in the decrease of natural populations of this plant species. The degradation of mangroves by this predatory and unregulated logging affects the associated fauna, especially invertebrates such as the uça crab, one of the most important species for the subsistence of local people and a critical species in the maintenance of healthy mangroves.



### *Threat 5. Decline of uça crab populations.*

21. The uça crab is an endangered species in Brazil since 2012, category “Near Threatened” under IUCN red list methodology<sup>[18]</sup>, and over 60% of the people living in, and around, the 12 protected areas of the coast of Pará targeted in this project depend on their harvest for their subsistence income generation<sup>[19]</sup>.

22. The mangrove crab is commercialized in Bragança (a) in natura (live animals) or (b) processed (paste and crab legs). The extractivism and commercialization of this species is very intense resulting in overexploitation of its populations and the production of residues from processing. In the last two decades the increase in the number of people harvesting uça crabs has caused a decrease in population numbers, as indicated by a reduction of 15% in the number of Captures Per Unit of Effort (CPUE)<sup>[20]</sup> and of average size of adult male individuals captured (D. Simith, unpublished data).

### **Barriers to the mitigation of threats to the varzea and mangroves.**

23. The barriers we describe are overarching obstacles to the conservation of biodiversity and the success of the implementation of community-based conservation processes.

24. **Group of barriers 1. Low technical capacity.** Local people have extensive knowledge of their environment and its associated biodiversity, especially of resources that they have historically used for their subsistence (e.g. the pirarucu). However, they lack training in skills needed to successfully implement and maintain modern management technologies such as monitoring protocols, financial management and reporting. Additionally, independently of training of managers, management initiatives require technical support for some steps of the management process demanded by public agencies that regulate extractivist activities.

25. **Group of barriers 2. Absence of adequate technology.** One of the challenges of maintaining extrativist activities sustainable is aggregating value to biodiversity products so producers (i.e. local communities) can have higher income, improve their livelihoods and therefore have incentives to maintain the natural resources they depend on. Because of the specificity of the environment and incipency of management systems for many natural resources of Amazonia, there is a general lack of adequate technology to improve participatory management practices and processes. There is also insufficient investment in research and development, on sanitary control protocols and aggregation of clean energy to production. These traits do not allow optimization of management, which would generate more effective use of natural resources.

26. **Group of barriers 3. Weak governance and political organization.** Over the last 50 years there has been significant strengthening of organized civil groups associated with specific natural resource management processes. However, governance is still weak and dependent on continuous and intensive technical-political support from NGOs and government; these groups need continuous support to keep activities running properly. Without this, governance of local people over natural resources remains weak and production chains continue to be unfavorable to them.

## **2) The baseline scenario and any associated baseline projects.**

27. The proposed project will build on being carried out by Mamiraua, the Ministry of Science, Technology and Innovations (MSTI), the National Center for Applied Technologies – Water (NCAT), and local governments and research institutes. The MSTI is a government agency responsible for financing scientific studies on the biology and conservation of natural resources, assessment of participatory management and improvement of its value chains. The MSTI provides funding for capacity building and for the adoption of advanced technologies to improve efficiency in value chains and to enhance the use of renewable energies. Cofinancing from MSTI will support activities under components 1 (capacity development) and 2 (implementation of the management plans and activities related to value chain development).

28. The NCAT-Water is implementing a project with financed by the MSTI related to water treatment and distribution for consumption and production activities in remote areas of the Amazon. Project activities implemented by NCAT-Water are well aligned and complementary to the proposed GEF projects as they are linked to the productive side of the management plans to be prepared and implemented under components 1 and 2. Local governments (Dept. of Agricultural Development and Fishery for the State of Para, Chico Mendes Institute for Conservation of Biodiversity) are supporting capacity building activities to conserve and use biodiversity sustainably.

### **Baseline activities by Mamiraua**

29. In 1996 researchers from Mamirauá Institute were pioneers in introducing a new paradigm in protected area management in Brazil and in the Amazon, proposing and implementing the first Sustainable Development Reserve of Brazil, Mamirauá Sustainable Development Reserve. This reserve was created under the rationale of protecting biodiversity without relocating local human populations. These people would actively participate in the management of the protected area and at the same time improve their livelihoods by using biodiversity sustainably.

30. The Sustainable Development Reserve category, a new category at the time, was created in the state of Amazonas, in Brazil, and formerly formalized and incorporated in the Brazilian National System of Conservation Units (SNUC) in 2000. The management experience of Mamirauá and Amanã Sustainable Development Reserves form the empirical knowledge for a biodiversity conservation model based on participatory management, territory and management zonation, norms and regulation of participatory and sustainable use of biodiversity, generation of economic benefits and an alliance with scientific research that guarantees adequate monitoring of results and sustainable systems that can be replicated in other regions of Amazonia and potentially other biomes.

31. The technologies and management protocols developed by Mamirauá Institute have been replicated throughout Amazonia as a model of regional development. Innovation of these practices has provided important subsidies for adequate formulation of public policies and environmental legislation for fisheries management, timber and non-timber products, wild caiman populations, community based tourism, protected area management and the consolidation of important biodiversity value chains. All of this resulting in high positive impact for the environment, the economy and local livelihoods.

32. In 2019 over 1,800 agricultural producers (i.e. fishermen, loggers, tourism workers and farmers) were directly supported by Mamirauá's technical staff, with a total revenue of approximately R\$ 5,000,000.



33. Mamirauá's presence, and on the ground scientific knowledge and involvement has promoted a social environmental sustainability culture that has been vigorously assimilated in many regions of Amazonia. Local, state and federal governments have already recognized and implemented Mamirauá's principals as a viable option for the sustainable socioeconomic development of the region.

34. Mamirauá's scientific research provides the basis for the legal management of over 40 species, including: fisheries for food consumption, ornamental fish species, timber and caiman, as well as the regulation for tourism in State and Federal Protected Areas.

35. Mamirauá Institute is one the centers of research of excellence of the Ministry of Science, Technology and Innovations, and the only research center in Central Amazon. The Institute is singular in its area of expertise, acting in the interface between research, biodiversity conservation, social and economic development, strengthening of sustainable biodiversity value chains and management of protected areas. It has high social, economic and scientific impact for the generation of sound public policies and is a crucial player in the sustainable development of Amazonia.

36. Given the good results obtained by Mamirauá Institute over the last two decades, the institution is continuously requested by the local population, and different government and non-government stakeholders, for the replication of successful management models in other regions of the Amazon and other biomes, as well as the conduction of research for generation of new social technologies. This project will be an important opportunity to cover some of these demands and greatly improve the livelihoods of thousands of local people of Amazonia.

#### **The baseline for pirarucu.**

37. Commercial fishing of pirarucu was banned in Amazonas state, in Brazil, in 1996 (Ordinance No. 8 February 2, 1996) in response to the drastic reduction in population numbers resulting from overexploitation<sup>[21]</sup>. Before the ban, pirarucu fishing took place throughout the year, but intensified during the dry season when fish are concentrated in varzea lakes. Trade occurred at the ports of urban areas and market prices were low, with fisherman mainly trading the fish for subsistence goods<sup>[22]</sup>.

38. Community-based management of pirarucu was first implemented in 1999, after researchers and local people developed a method to count pirarucu<sup>[23]</sup>, hence the possibility of estimating population size, determining annual harvest quotas and monitoring populations of pirarucu over time. The participatory and adaptive management model of this process allowed the appropriation of management actions by local people as well as increased their governance over natural resources<sup>15</sup>. It also allowed continuous evaluation of the management process.

39. Today more than 3,000 fisherman families are benefited from community-based management of pirarucu in the State of Amazonas, resulting from the training and technical support of Mamirauá Institute. This social technology developed by the institute, together with local fishermen, has already been replicated to other states of Amazonia Legal, including other countries such as Peru, Guiana and Bolivia. In the areas that Mamirauá Institute provides direct technical support more than R\$ 20,000,000 (~US\$ of revenue have been generated in the last 20 years, with an average individual income over the last five years of R\$ 2,000 per fisherman. Simultaneously, the natural stock of pirarucus increased by approximately 427% in areas managed with support from the Mamirauá Institute<sup>[24]</sup>.

40. Despite the success of community-based management of pirarucu inside protected areas, pirarucu population continued to be pressured inside and outside protected areas, mainly because of the marginalized group of stakeholders that lost access to the booming resources from within protected areas. To try to mitigate this issue Mamirauá Institute has guided “fishing accords” (agreements between fisherman from inside and outside protected areas) to allow fisherman from outside protected areas to participate in the community-based management of pirarucu inside protected areas. Using this community-based management of pirarucu has also worked outside protected areas<sup>8</sup>.

#### **The baseline for caiman**

41. In 2000, Brazilian legislation started to allow controlled harvesting of caiman in some categories protected area (Federal Law No. 9,985). Experimental harvesting carried out between 2004 and 2010 in Mamirauá Sustainable Development Reserve showed that sustainable management of the black caiman (*Melanosuchus niger*) was possible. Associated with research and monitoring, this experience served as a basis for the elaboration of specific state legislation for the management of caimans in protected areas of Amazonas state (Resolution CEMAAM nº 008/2011 and IN SEPROR / CODESAV nº 001 / 2011). Initiatives for the development of caiman management have been articulated during this period in other sectors of the RDS Mamirauá, as well as in other protected areas.

#### **The baseline for forestry**

42. Before the introduction of management plans as the official tool to control logging, most harvest activities in the state of Amazonas occurred in the varzea. In 1978 the first forestry management plan was developed for the Tapajós River basin, using concepts introduced by international institutions, such as FAO in the 50s, and EMBRAPA and INPA, in the 70s and 80s respectively <sup>[25]</sup>.

43. In 1998, a regiment for the procedures related to Multiple Use Sustainable Forest Management activities in the Legal Amazon was established (Decree number 2,788). This decree also regulates Community Forest Management Plans, which could then be developed by associations or cooperatives, through a single Simplified Forest Management Plan. In 2010, the areas licensed for Forest Management Plans totaled approximately 3.5 million hectares.

#### **The baseline scenario in the mangrove target areas.**

44. In 2002, the National Environment Council (CONAMA), through Resolution No. 303, in its article 3, item X, that mangroves are Permanent Preservation Area (PPA), defined as a “protected area, covered or not by native vegetation, with the environmental function of preserving water resources, the landscape, geological stability and biodiversity, facilitating the gene flow of fauna and flora, protecting the soil and ensuring the well-being of human populations”.

45. The white mangrove tree represents approximately 8% of all tree individuals in the mangroves of the coast of Pará, 88 ind./ha <sup>[26]</sup>, however there is currently no quantitative information on the impact of human activities to this species.

46. The Federal University of Pará, Bragança campus, Sedap, ICMBio and the Mamirauá Institute have advanced in the last nine years in studies and extension projects relating knowledge about the environment and the sustainable way to extract and transport crab from mangroves of the coast of Pará State. After initial actions with the managers, there was a reduction in crab mortality during transport from 66% to almost zero. In this project this process will be consolidated in pilot areas and expanded to new areas.

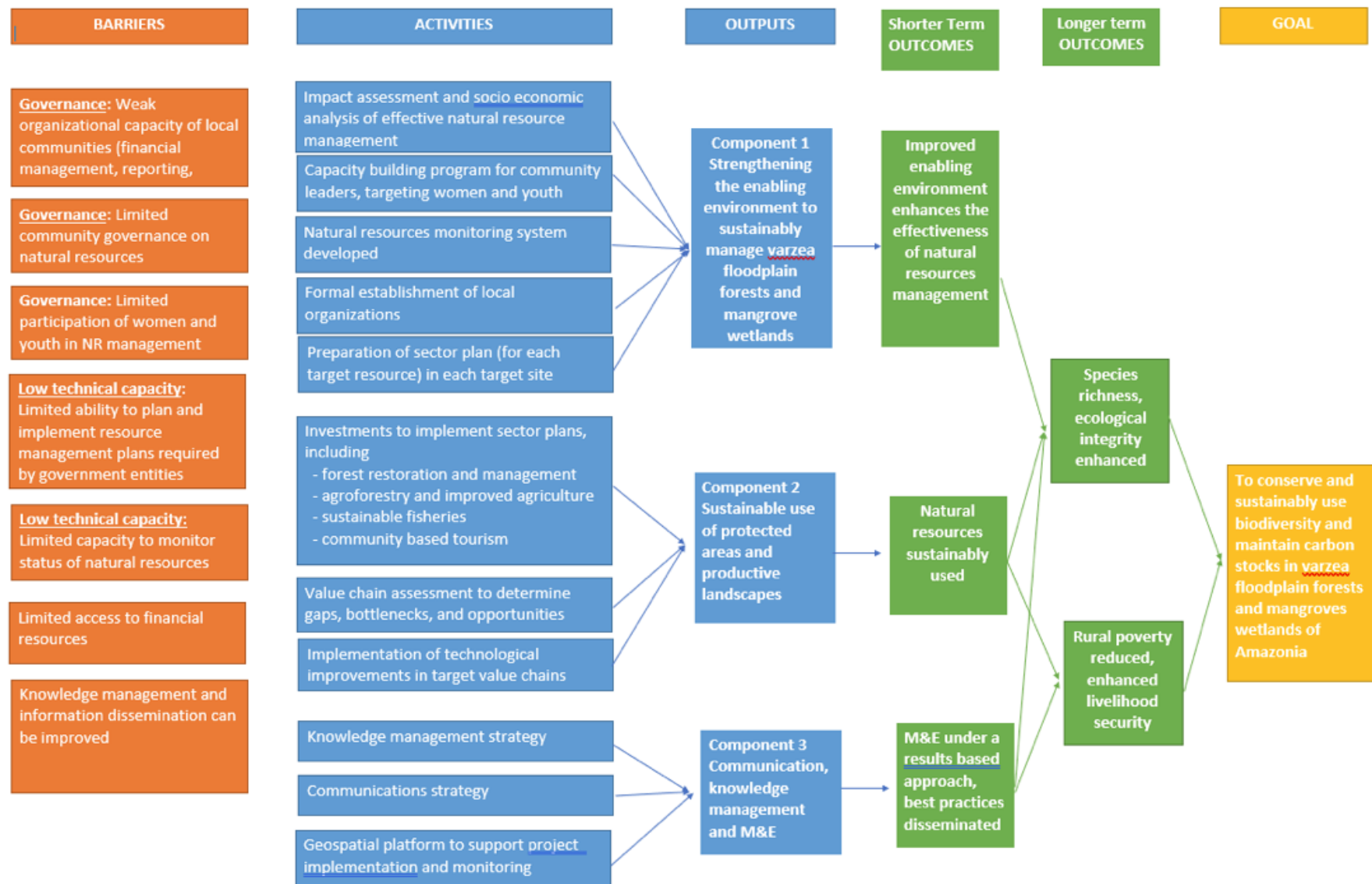
### **3) The proposed alternative scenario with a brief description of expected outcomes and components of the project.**

47. The objective of this project is *to conserve and sustainably use biodiversity and maintain carbon stocks in varzea floodplain forests and mangroves wetlands of Amazonia.*

48. The Government of Brazil, through the Mamirauá Institute is requesting support from the Global Environmental Facility (GEF) to develop an adequate environment and local capacity for the sustainable use of biodiversity in continental and coastal wetlands of Amazonia, thus reversing trends of biodiversity loss and improving local livelihoods. The alternative scenario proposed in this project is one where biodiversity is mainstreamed through the successful implementation of social technologies developed by Mamirauá Institute in important wetlands of Amazonia, expanding successful protocols to the states of Pará and Amapá as well as in areas of Amazonas state outside protected areas in the municipalities of Tefé, Uarini, Alvarães and Maraã. The project will also implement social technologies to improve production and livelihoods in floodplain and mangroves. The project's Theory of Change is presented in Figure 3 below.



Figure 3. Theory of Change



## Key Assumptions for the Theory of Change

Stakeholders from different levels and across many sectors cooperate in the

capacity building programs, and in the design of community-based management protocols. Government stakeholders participate to ensure that management protocols are in line with national regulations. Mechanisms to resolve conflicts are put in place (Component 1)

Socio economic analysis is representative targeting the selected regions, protected areas, production systems and value chains (Component 1).

Stakeholders, including local communities, are willing to participate actively in the capacity building programs and commit to the development of the management plans. Local communities apply lessons learned in their practices and management of natural resources (Component 1 and 2)

Monitoring System effectively informs management protocols (Component 1).

Communities get the required knowledge for managing the technological improvements for value chains and management protocols: knowledge remains with local communities (Component 2).

Communication strategy targets key stakeholders and delivers key messages across multiple sectors about best practices and lessons learned from the project. The messages are up scaled by stakeholders to other

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**Component 1.** Strengthening the enabling environment to sustainably manage varzea floodplain forests and mangrove wetlands.

49. Component 1 will focus on strengthening the enabling environment to enhance the effectiveness of natural resource management in the target sites. This includes strengthening capacities of local actors (including local organizations) to ensure they can play their role in community based management of natural resources, developing management protocols (i.e. resource management and exploitation plans) in the context existing normatives for protected areas in Brazil, and adopting a biodiversity monitoring tool that can feed back into the resource management process. The following outputs are envisaged:

*Output 1.1.1. Capacity building program for community leaders developed and implemented*

50. The project will support the design and implementation of a capacity building program for community leaders to allow them to develop and implement management protocols for agroforestry, forestry, non-timber products, pirarucu, caiman, mangrove crab, and community-based tourism. During the project preparation process, a capacity needs assessment will be carried out to evaluate existing gaps in terms of knowledge, skills, strengths, and other elements required for them to achieve their objectives.

51. The capacity building program is expected to include courses for six biodiversity management protocols: fisheries, caiman, mangrove crab, agroecology, forestry and community-based tourism in 26 protected areas and 6 non-protected areas (Figures 1, 2, 3 and 4 in Annex A). The program will have two formats: (i) short modular courses (80 hours) for each management protocol covering basic elements of the biology and ecology of managed species, socio anthropological characteristics of Amazonian human populations, principles and directives of zoning in protected areas, tools and methodologies used in implementing management protocols and laws and normatives associated to management of biodiversity.

52. The proposed courses will target managers and technicians of public and private organizations that give support to local people in the implementation of management plans in protected areas. We expect to reach 2,450 people in these activities covering all target areas. (ii) one long course (1,800 hours) with the objective of building capacity in young leaders to mainstream biodiversity in their communities and regions, as well as help local community organizations to improve their management initiatives. The course will cover basic principles of accounting, computer skills, portuguese, math, grant/project/report writing, business, meeting moderation, public policies related to biodiversity use, solar energy technologies and institutional relations. This course will focus on young leaders from protected areas and we expect to reach 50 people in this activity over the course of 48 months. Fifty percent of the class will be reserved for women, and a workshop about the participation of women in biodiversity management will also be held.

53. These capacity building activities will create background knowledge in all target areas of the project and will be fundamental in the processes that directly address threats described in this project. They will also lay ground for future development of sustainable participatory management processes in those areas. In the alternative scenario we propose local people will have the skills they need to start sustainable activities in their respective areas.

*Output 1.1.2. Local organizations created or strengthened to engage in the sustainable management of natural resources.*



54. In order to formally engage with protected areas and national ministries and local institutions, the project will strengthen, both politically and administratively, local organizations linked to sustainable management of natural resources. A number of activities will be executed to build capacity, exchange knowledge and provide social, legal and accounting support to at least 11 local associations (two of them exclusively composed of women). These associations are responsible for the implementation of the resource management plans. Workshops will include topics such as finance and financial management, administration, accounting, management plan development, licitation (i.e. calls for proposals) procedures, and institutional relations. Building on the work under 2.1.2, the courses will discuss the bottlenecks for biodiversity value chains in order to find solutions from an institutional perspective.

55. Besides providing local organizations with the skills to develop and effectively implement resource management protocols, the project will empower local community organizations, which are crucial for the successful link of the extractive activities and the market. The objective of this component is to ensure that these local organizations will have the skills necessary to successfully run the commercial aspects of the management process.

*Output 1.1.3. Community-based management protocols (linked to Protected Area management plans) developed for target resources (i.e. fisheries, caiman, mangrove crab, agroecology, forestry, and community based tourism).*

56. As discussed above, the project will operate in and around 26 protected areas. Of the protected areas where direct actions for the management of natural resources will be carried out, about 60% have management plans (see Annex E). The project will act as a catalyst for the preparation of these plans for areas that do not yet have them. However, legal instruments allow sustainable use of natural resources through specific resource management plans, even in areas that do not have management plans for the entire protected area. Examples are management plans for forestry and for the sustainable harvest of Caiman in Piagaçu-Purus Sustainable Development Reserve.

57. In this output, the project will support the development of management plans for all supported initiatives, namely agroforestry, non-timber products, forestry, pirarucu, caiman and mangrove crab management, as well as community-based tourism (see Annex D for specification of type of management per target area). Technical support will be provided for all management initiatives assisted in this project. Technical support of extractivist activities is a demand of biodiversity regulating government agencies. In this component Mamirauá Institute will implement management plans together with local communities, using experienced staff to create an effective process of transferring knowledge.

58. The development of the management plan is a necessary initial step in managing biodiversity. The lack of technical capacity and resources is a major obstacle. The alternative scenario we are proposing is one where key resources that are currently used without planning will have a clear protocol and path to explore resources sustainably.

*Outcome 1.1.4. Biodiversity monitoring tool developed and adopted by target sites*

59. Mamirauá is in the process of developing a tool that would allow local communities, protected area managers, scientists, governments and society as a whole to (1) effectively monitor biodiversity in the Amazon (and other tropical forests), (2) to foresee the impact of deforestation and climate change on these natural communities, and (3) also that will increase global awareness, understanding and appreciation of biodiversity.<sup>[27]</sup> The proposed tool will use

state of the art technology (i.e. Providence nodes) that allows continuous monitoring of biodiversity under a standard protocol, with real-time identification of species through image and sound cues (allowing the identification of more species than any other method available to date), wireless data transmission (i.e. with the capacity to send information from anywhere on the globe), and low energy consumption (to last long periods without the need of maintenance).

60. The proposed project will support the implementation of the monitoring tool in the target sites. This includes training local communities on protocols for node maintenance, data collection, data analysis (biodiversity measures, species distribution maps, behavioral patterns) that can be used to update and monitor management plans developed in 1.1.3.

**Component 2.** Sustainable use of protected areas and productive landscapes

*Outcome 2.1. Improved management mechanisms for key biodiversity resources.*

61. Component 2 will support the implementation of the resource management plans outlined above. Mamirauá will continue providing the government-mandated technical support to local organization during the implementation of management plans for the target management plans as follows:

Table 1. Type of management plan by target protected area and landscape

Type of management plan	Terrestrial Protected Areas	Marine Protected Areas	Productive Landscapes
Forestry management plans	RDS Pigacu-Purus FN do Amapa FE do Amapa		CL Jurupari Grande CL do Parana do Jacare C de Seringa
Caiman management plans	RDS Pigacu-Purus		
Fisheries management plan	RE do Rio Unini		
Crab management plan	RE do Sao Joao da Ponta RE do Mae Grande de Curuca RE Chocoare-Mato Grosso	REM de Soure REM Mocapajuba REM Cuinarana REM Mestre Lucindo REM do Maracanã REM de Tracuateua REM de Caeté-Taperaçu REM de Araí-Peroba REM de Gurupi-Piriá	
Agroforestry mgmnt plan			Regiao de Tefe
Sustainable tourism	TI Jaquiri		

Notes: RDS: Reserva de Desenvolvimento Sustentável; RE: Reserva Extrativista; FN: Floresta Nacional; FE: Floresta Estadual; REM: Reserva Extrativista Marinha; CL: Complexo de Lagos; C: Complexo

62. During project preparation, the project team will carry out baseline assessments for each resource in order to establish monitoring targets for the life of the project. At a minimum, the project will aim to ensure that the populations of pirarucu, caiman, and crabs are kept at least at the baseline levels (i.e. there are no losses due to sustainable exploitation). Similarly, for forestry and agroforestry management plans, the overarching objective will be to reduce deforestation and land degradation. Finally, for sustainable tourism, the objective of the project will be to increase the income and improve the livelihoods of local communities. Precise indicators and targets will be defined during project preparation.

63. Outcome 2.2. Social and sustainable technologies are effectively incorporated into community based productive processes.

*Output 2.2.1. Improved livelihood opportunities for local communities arising from the adoption of sustainable technologies to strengthen target biodiversity value chains.*

64. In order to take full advantage of the natural resource management plans developed in 1.1.3 and implemented in 2.1.2, special emphasis will be placed on solving bottle necks in key value chains. In this context, Mamirauá Institute, with the support of the Ministry of Science, Technology and Innovations (MSTI), has developed innovative technologies for processing natural resources, covering sanitary regulations and improving weak links in the production chain of fisheries and agroforestry products in the varzea and low land terra firme forests of Amazonia, as well as extractivism of crabs in the mangroves of the coast of Pará state.

65. These technological solutions will help managers, local governments, the Brazilian Micro Support Service and Small Business to meet the regulations of Geographic Indication for the Pirarucu from Mamiraua Reserve and manioc flour from Uarini municipality. These technologies, coupled with activities under 1.1.3 and 2.1.1 will also allow local communities access new markets via public policies such as the National Food Acquisition Program (PAA), the National Food Acquisition Policy for School Lunch (PNAE) and the minimum price guarantee policy of Companhia Nacional de Abastecimento (CONAB). These existing projects and policies are aimed at supporting products with a sustainable extractive base, providing subsidies and adding socio-environmental value to access the markets, however the regulations require hygienic-sanitary safety and the guarantee of the maintenance of biodiversity aspects that will be strengthened by this project.

66. During project preparation, a detailed assessment of the target value chains (pirarucu, agroforestry, crab, tourism) will be carried out to identify critical issues impacting their performance. Nonetheless, the project team foresees the following activities as a solution for the group of barriers 2:

- Pirarucu
  - o The project team proposes to build and further develop three floating production stations for the management of pirarucu
  - o The floating fisheries processing units adapted to wetlands will measure 154 m<sup>2</sup>, and can be moved according to water level or if it needs to be used in a different water way.
  - o The unit is subdivided into eight areas: sanitary barrier, reception yard and fish washing; evisceration and cleaning room; monitoring and dispatch room; kitchen; bathroom; deposit; water treatment station and power generator room.
  - o This structure will help promote the alternative scenario where pirarucu fishing accords have all the needed infrastructure to function properly.
- Agroforestry
  - o The project team proposes to build and further develop two stations to improve fruit-pulp production from agroforestry initiatives. Fruit pulp production units will be equipped with a solar energy system, water treatment and sewage system, in addition to the necessary tools to guarantee hygiene during processing
  - o In addition, the team proposes to build and further develop three stations to improve manioc flour production
  - o Manioc flour production units of 91 m<sup>2</sup> will be built to carry out the following steps: softening and peeling of the manioc, segregating and pressing the manioc dough, sifting and blending the dry dough, toasting and bagging. Its infrastructure has an ecological oven that increases the concentration of heat, which reduces the amount of firewood needed for processing and reduces the release of greenhouse gases, a water system, a toilet and specific utensils for processing.
- Crab management
  - o The project team proposes to build and further develop one unit of a technology to produce soil fertilizer from byproducts of mangrove crab management.

- o Capacity building for sustainable harvest and transport of the mangrove crab will be conducted in partnership with the Department of Fish and Agricultural Development of the State of Para (SEDAP) and the Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio).
- o Over the last 15 years it is estimated that 1,3 million crabs have been commercialized per year. Over 60% of these animals are harvested within Federal Protected Areas. The method of transport of the mangrove crab, in baskets, was developed by Embrapa Meio-Norte in the Delta of the Parnaíba river, in Piauí State. The method has been adapted for the Extractivist Reserves targeted by this project. This adapted technique and transport method is described in the protocol "Management of uçá crab: the packaging method for sustainable transport".
- o Under this component we expect to raise awareness and capacitate fishermen for adoption of this technology, reducing damage to animals and improving their profits.
- o The methodology used for the production of flour from solid residues from crab processing has been adapted to the local context to reduce sanitary and environmental impacts, as well as a means of generating extra income. The flour produced from crab shells can be commercialized or used as a natural fertilizer for agriculture or animal ration.

67. Finally, the project team proposes to adapt an electric engine for traditional amazon canoes - critical instruments for transport of produce and people. This will expand the use of solar energy in central amazon and, potentially, in the coast, and help avoid greenhouse gas emissions. This technology will support the community-based tourism initiative, minimizing the impact of this activity on the environment by substituting current gas engines.

### **Component 3. Monitoring and evaluation of the impact of knowledge transfer and good practices.**

68. The outcome associated with this component is designed to ensure that project implementation is supported by an M&E strategy based on measurable and verifiable results and adaptive management principles. The M&E strategy of the project will be formulated with the relevant stakeholders and the expected results will be clearly defined, as well as the expected time frames for its achievement and confirmation through objective indicators and means of verification. Annual work plans and the pertinent budgets will also be developed based on the expected results and the respective progress made, including the progressive steps and milestones required to obtain measurable achievements. To help with this process, annual work plans will be combined with annual progress indicators in a participatory manner for each result.

69. Mid-term and end-of-period evaluations will be carried out at strategic intervals to inform and advise on project implementation in a constructive way, paying attention to sustainability considerations, preparing a coherent "exit strategy" and applying adaptive measures, as needed. During the course of project implementation, the lessons learned and the best practices related to the project will be systematized and disseminated to various audiences and groups of interest. A project website will also be established and updated (with relevant links to MINEC and MPPAPT, among other) to share experiences on an ongoing basis, disseminate information, develop policies and integration, highlight results and progress, and facilitate process replication while the project lasts. Communication strategies will be developed using Mamirauá's website and social media pages, technical publications and seminars.

### **4) Alignment with GEF focal area and/or Impact Program strategies**

70. The proposed project is aligned with the GEF-7 Biodiversity Focal Area. In particular, it will contribute to focal area element *BD-1-1 Mainstream biodiversity across sectors as well as landscape and seascapes through biodiversity mainstreaming in priority sectors*. The project will work with local communities improve and change production practices to be more biodiversity-friendly and reduce the impact from key sectors (fisheries, forestry, agriculture). It will use principles of spatial land use planning to support the development of forestry management plans.

71. In addition, the project is aligned with *BD-2-7. Address direct drivers to protect habitats and species and Improve financial sustainability, effective management, and ecosystem coverage of the global protected area estate*. The proposed project will use the proven model developed by Mamiraua to strengthen the capacity of indigenous peoples and local community organizations to conserve and sustainably use natural resources. It will support the effective management of target protected areas by developing and implementing targeted resource management plans.

## **5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing**

72. Technical knowledge for implementation of biodiversity management processes are very poorly disseminated and, as a consequence, there is still a very limited number of capacitated human resources to implement and coordinate sustainable management processes. Extractive activities are still disarticulated with the rest of the biodiversity value chain.

73. Component 1 will contribute to the mitigation of barriers 1 and 3, improving the ability of managers to execute different steps of the management process, and providing technical support demanded by public agencies that regulate extractivism activities (i.e. IBAMA and IPAAM). Under business as usual, local communities will continue to use natural resources in an unsustainable way—without institutional organization, with limited capacities and without an information system that provides feedback to the resource management process. Activities under Component 1 will help structure and strengthen local community organizations, making them able to create fiscal receipts and to access public policies. The GEF's contribution will be used to improve and consolidate the participatory management models (interrelation of technical, managerial, financial and administrative processes) of natural resources necessary for the maintenance of wetland species and to adopt a biodiversity monitoring tool to ensure targets are met. The co-financing (\$8.85 million) will guarantee the majority of the project's technical staff and mainly scholarships for scientific studies on ecosystems. The project will invest approximately US\$ 1,100,185 from GEF resources to achieve this goal.

74. Component 2 will contribute to the mitigation of barrier 2 by supporting the implementation of resource management plans developed in Component 1, and by implementing adequate and sustainable technologies to improve extractivist and productive processes for target value chains. Creating new and adequate infrastructure is a key investment to improve processing in remote areas of Amazonia and to achieve all sanitary demands. In turn, this improvement allows exploration of larger markets and aggregation of value to products. In the baseline scenario, local communities extract and process natural resources using inefficient processes and without meeting conditions that would allow them to access public policies (see next paragraph). Overall this project acts with an integrative approach between conservation and mainstreaming biodiversity and better livelihoods for local people of Amazonia. GEF's contribution will support the implementation of management plans and in the development and adaptation of sustainable production units. The co-financing (\$8.0 million) will provide scholarships to adapt and validate the technologies. The project will invest approximately US\$ 1,560,000 from GEF resources to finance activities under this component.

75. Activities of components 1 and 2 will help managers, local governments, the Brazilian Micro Support Service and Small Business to meet the regulations of Geographic Indication for the Pirarucu from Mamiraua Reserve and manioc flour from Uarini municipality. And also access public policies: National Food Acquisition Program (PAA), National Food Acquisition Policy for School Lunch (PNAE) and the minimum price guarantee policy of Companhia Nacional de Abastecimento (CONAB). These existing projects and policies are aimed at supporting products with a sustainable extractive base, providing subsidies and adding socio-environmental value to access the markets, however the regulations require hygienic-sanitary safety and the guarantee of the maintenance of biodiversity aspects that will be strengthened by this project.

**Component 3 will have incremental GEF funding (USD 589,000) to monitor and evaluate project progress and compliance with indicators, mid-term and final external evaluations, systematization of experiences and lessons learned, preparation of outreach and dissemination materials, and project outputs and results.**

#### **6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)**

76. The varzea plays a fundamental role in the provision of environmental services, such as filtering and retaining water and sediments, recharging aquifers and regulating microclimate, and as important reserves of terrestrial carbon. In addition, they function as an important place for shelter, food, reproduction and nursery for a large number of species. It is estimated that approximately 50% of fish species in the Amazon occur in floodplain systems associated with large rivers, including almost all species of commercial importance.

77. The main global environmental benefits to be achieved as a result of the project are:

- conservation and sustainable use of globally significant biodiversity in Amazon wetlands
- Improved management (measured by METT) of 972,776 ha in 17 protected areas for which resource management plans for (i) forestry, (ii) caiman, (iii) fisheries, (iv) crab, and (v) tourism are developed and implemented. This area covers approximately 10% of the total area of the 17 protected areas. (Core Indicator 1)
- Improved management of natural resources in 33,242 ha of production landscapes covering 3 lake complexes (Jurupari Grande, Parana do Jacare, and Seringa) and the Tefe region where fisheries and agroforestry management plans are implemented. (Core Indicator 4.1)
- Improved capacity of at least 5,975 people (3,985 men and 1,990 women) in communities prioritized for the conservation and sustainable use of wetlands ecosystems (Core Indicator 11). Capacity building activities will take place in all 32 target protected areas and landscapes (i.e. the 17 protected areas under Core Indicator 1, the 4 landscapes under Core Indicator 4, and the remaining 11 protected areas and target landscapes that may not receive funds for investment under Component 2).

78. These benefits will translate into direct benefits to amazonian species, many of which are of global significance, including, but not limited to: migratory species, including fish species such as gilded-catfish (*Brachyplatystoma rousseauxii*), tiger-sorubim (*Pseudoplatystoma tigrinum*) and kumakuma (*Brachyplatystoma filamentosum*); birds such as the sunderling (*Calidris alba*), Yellow-billed tern (*Sternula supercilialis*), seagulls (*Phaetusa simplex*) and the black skimmer (*Rynchops niger*); species of great economic and cultural importance such as the pirarucu (*Arapaima gigas*), tambaqui (*Colossoma*

*macropomum*) and the mangrove-crab (*Ucides cordatus*); threatened species such as the manatee (*Trichechus inunguis*), jaguar (*Panthera onca*), harpy-eagle (*Harpia harpyja*); and important wood species such as the samaúma (*Ceiba pentandra*), ucuúba (*Virola surinamensis*), cedro (*Cedrela odorata*) and Louro-inamui (*Ocotea cymbarum*).

## 7) Innovation, sustainability and potential for scaling up

79. **Innovation:** The project aims to integrate national, regional and local stakeholders for the conservation and sustainable use of wetlands, and empower local stakeholders for territorial planning processes. The project will strengthen capacities for the effective and appropriate use of planning methodologies and decision support that contribute to the targeting of interventions, to identify and understand the main causes/drivers of degradation, to the selection and design of instruments that optimize net social and environmental results and/or understand the circumstances in which the maintenance of ecosystems and their services can generate a greater economic benefit than the promotion of economic processes that degrade and deplete ecosystems.

80. In this context, the project is innovative in a number of actions. First, it brings technical capacity to areas of Amazonia where it is lacking and promotes gender equality in biodiversity management processes. Second, the project will be innovative in terms of the use of technologies and applications for production, access to markets and monitoring of natural resources. Third, the project will be innovative in the use of state of the art monitoring system. Finally, the promotion of alliances to catalyze innovations in technology, policies, financing and business models for the more sustainable development of productive activities is another innovative aspect of the project.

81. **Sustainability:** This project is aligned with national biodiversity conservation and development strategies for the Amazon forest and is complementary to other important GEF projects occurring in the region (see coordination with other GEF projects). The sustainability instruments that will support the project's actions are:

- The Fisheries Agreements, regulated by IBAMA Normative Instruction No. 29, December 31, 2002, which recognizes the interests and the importance of the participation of collectives from riverside communities in sustainable exploration and the capacity to inspect the areas to guarantee the natural stock of different species. State Environmental agencies, through specific Ordinances and Normative Instructions, also recognize this instrument as important for territorial management. This instrument has the potential to serve as a model for other management plans that will be developed in the project.
- Ordinance No. 19/2005 of the Ministry of the Environment, Complementary Law 57/2007 of the Gov. Amazonas and Resolution 02/2008 of CEMA/AM, which regulate volunteering in protected areas and the Voluntary Environmental Agents Program that provides guidelines for voluntary participation in environmental education activities, protection, preservation and conservation of natural resources, and provides legal support for the maintenance of other management activities.

82. Mamirauá Institute is close to signing a ten year contract with the government of Brazil, guaranteeing funding for the maintenance of the Institute and its activities for the next decade. This will guarantee the continuation of many of the capacity building activities proposed in this project, the improvement of management protocols and technological development needed to make processes more effective and improve local livelihoods.



83. **Potential for scaling up:** Since it was created, over two decades ago, Mamirauá Institute follows the rationale that management protocols must be based in scientific knowledge (many times complemented by traditional knowledge) and be replicable so that they can achieve other regions of the Amazon and eventually other biomes. Mamirauá Sustainable Development Reserve represents the epitome of this concept. First reserve of its category in Brazil, the model of sustainable development reserves created by the researchers that started Mamirauá Institute, have been applied to 42 other areas, protecting 11.331.948,89 ha and providing food security to thousands of families.

84. All activities proposed in this project have high scaling-up potential. The experience and knowledge of Mamirauá Institute's staff guarantees that protocols, technologies and courses created will follow the rationale that they are replicable and adequate for the Amazon region and its peoples.

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[3] Examples include the Amazon Region Protected Areas Program, the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm), the Terra Legal Program, the National Landscape Connectivity Program (CONECTA), the National Policy for Territorial and Environmental Management of Indigenous Land (PNGATI), the National Water Resources Policy, among others.

[4] According to the annual PRODES report by INPE, approximately 18,000 square kilometers were lost in 2000 compared to almost 7,000 in 2017.

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[27] Project Providence is an international collaboration between Mamirauá Sustainable Development Institute (Brazil), The Sense of Silence Foundation (Spain), Commonwealth Scientific and Industrial Research Organisation – CSIRO (Australia) and the Federal University of Amazonas (Brazil). Phase 1 of the project is funded by the Gordon and Betty Moore Foundation.

#### 1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Please see Annex A.

## 2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities ☒ Yes

Civil Society Organizations ☒ Yes

Private Sector Entities ☒ Yes

If none of the above, please explain why:



In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

1. During project identification (late August, September and October) and given the restrictions brought about by the COVID-19 pandemic, Mamirauá consulted electronically with representatives from state (Amazonas and Pará), municipal (such as Tefé municipality), and local governments where the target areas are located to inquire about their interest and potential role in the proposed project. In addition academic institutions (i.e. Federal Universities of Pará) were consulted about their interest in supporting this initiative. Both government and academic institutions indicated their willingness to cooperate with the project and their interest to be part of the project design. Similarly, using Mamirauá's network of offices and partners, leaders of local communities in the states of Amazonas and Para were informed about the potential project. Their response was positive and they highlighted the need for capacity building and technical support. During project preparation, a detailed stakeholder engagement and participation plan will be developed and social and economic assessments will be carried out for targeted communities.

Stakeholders	Interest / Role in the preparation and design of the project	How will they be engaged during the project preparation process? Means of engagement
Mamirauá Sustainable Development Institute	Executing Entity. Will lead the project from conception, validation and design to implementation. Will be the point of interaction between project participants and will be responsible for training methodology, meetings and model productive units.	Organize and lead the discussions
Ministry of Science, Technology and Innovations (MSTI)	Agency responsible for financing scientific studies on the biology and conservation of natural resources, assessment of participatory management and improvement of its value chains. MSTI will participate in monitoring the performance of the Mamirauá Institute in line with the priorities established in Ordinance N°. 1,122, of March 19, 2020.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
Ministry of Agriculture, Livestock and Supply (MAPA)	Agency responsible for public policies that regulate and provide subsidies to products of socio-biodiversity in the private market and in the public procurement market. Also responsible for normative instruction with technical standards for obtaining organic products from sustainable organic extraction. It is a potential agent to participate in actions to mitigate bottlenecks in the production chain, which will be better defined after in the activities of the PPG.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
National Indian Foundation	Organization responsible for approval of the visitation plan of Jaquiri Indigenous Land. Will participate in consultations with indigenous populations and in the conception, validation, design and monitoring of the project.	Will be invited to participate in steering committee meetings and other key

		key stakeholder meetings (Inception, validation workshops)
Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA)	Agency responsible for the evaluation and authorization of management and quota requests of biodiversity products. IBAMA will actively participate in the monitoring of pirarucu and caiman management.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio)	Agency responsible for the management of all federal protected areas. Will participate in the conception, validation, design and monitoring of the project.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
State Environmental Agencies of Amazonas, Pará e Amapá	Environmental agencies responsible for the management of state protected areas in the three states where the project will be executed. Will participate in the conception, validation, design and monitoring of the project.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
Amazon Environmental Protection Institute (Ipaam)	Institution responsible for inspecting the areas that carry out reduced impact forestry and that issues the license, authorizing the annual extraction. Participates in the monitoring of management plans.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
Department of Agricultural Development and Fishery of the State of Pará (Sedap)	Co-executing agency of all activities related to mangrove crab management in the state of Pará. Will participate in consultations with local populations and in the conception, validation, design and monitoring of the project. Will supply key technical information for the project.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
Federal University of (UFPA), Amazonian Institute of Family Agriculture	Partners in the articulation and execution of training for implementation of the agroecosystems protocol in the state of Pará	Provides technical information. Participates in c



Small Institute of Family Agriculture	Terms protocol in the state of Pará.	Participates in consultations and project design validation processes.
Federal University of Pará (UFPA), Institute of Technology	Partner responsible for the technical aspects of dimensioning and installation of solar energy technology to productive units and adaptation of electric engines to Amazonian canoes.	Provides technical information. Participates in consultations and project design validation processes.
Mangrove Ecology Laboratory Federal University of (UFPA) - Federal University of Pará (UFPA) - Bragança Campus	Co-executing agency of all activities related to mangrove crab management in the state of Pará. Responsible for the solid waste processing system from the uçá crab "picking" activity in the three marine RESEX in the municipalities of Augusto Corrêa, Bragança and Tracuateua.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
Department of Rural Development of the State of Amapá, Forestry Institute of Amapá	Partners that will provide technical assistance to local organizations relating to non-timber products in the state of Amapá. Will participate in consultations with local populations and in the conception, validation, design and monitoring of the project. Will supply key technical information for the project.	Will be invited to participate in steering committee meetings and other key stakeholder meetings (Inception, validation workshops)
Community Organizations	They are organizations representing local populations. They will be beneficiaries, contribute with traditional knowledge and actively participate in the design, validation and monitoring of the project.	Face-to-face consultations in local language and participate in the design, validation and monitoring of the project.
Other organizations: Instituto de Manejo e Certificação Florestal e Agrícola (IMAFLORA), Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Sebrae), World Wildlife Fund (WWF).	Potential institutions for actions to mitigate bottlenecks in production chains, which will be defined after PPG. They will participate with technical assistance for the administration of community businesses and enabling fair market access for sustainable extraction products.	Participates in consultations and project design validation processes.

### 3. Gender Equality and Women's Empowerment

**Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).**

85. According to the Brazilian Institute of Geography and Statistics (IBGE), approximately 15 million women live in rural areas (47.5% of the population) and they are responsible for the administration of 20% of businesses. Women also represent 45% of the one million artisanal fishermen of Brazil. Despite these very representative numbers, acknowledgement of the importance of women in biodiversity value chain and agroforestry production in Amazonia is still low, as they continue to be attributed only to domestic tasks and family care.

86. Mamirauá Institute has conducted several research projects to identify the participation of women in fisheries, extractivism of non-timber products and AFSs, and understand its importance for politics, well-being, food security and income generation. The institute has also promoted actions to increase the participation of women in biodiversity management processes. In this project's design phase, the knowledge gathered through these studies and experience from these actions will be discussed to define the best strategy to improve gender equality and empower women in biodiversity management processes. Based on this analysis, a gender action plan will be prepared to include practical activities to ensure equal access of men and women to all aspects of project development and implementation.

87. The project will target women and will ensure that their needs are met in order to participate in the different project activities (i.e. training specifically for women, women leaders, care for children, transport costs). In particular, under Output 1.1.1, during the training of young leaders, the project will ensure that at least 50% of the participants are women. In addition, project activities under Component 2 will also target women beneficiaries. Full details will be developed during the project preparation phase.

**Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes**

**closing gender gaps in access to and control over natural resources; Yes**

**improving women's participation and decision-making; and/or Yes**

**generating socio-economic benefits or services for women. Yes**

**Will the project's results framework or logical framework include gender-sensitive indicators?**

**Yes**

#### 4. Private sector engagement

Will there be private sector engagement in the project?

Yes

**Please briefly explain the rationale behind your answer.**

88. The private sector already participates in the commercial arrangements but in an unarticulated way, resulting in decreasing prices over the years and insufficient to pay the total handling expenses and impairing the valorization of the products of sustainable extraction in the market. Some of the main representatives of the private sector are in the transportation of products, slaughterhouses, sawmills and furniture and tour operators. The diagnosis that will be made during the preparation phase will identify the bottlenecks and opportunities for project actions with this sector.

89. The private segment participating in the value chain is represented by associations of producers who will be directly beneficiaries of the project, and intermediaries and secondary beneficiaries.

## 5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Risk	L e v e l	Mitigation
Changes in public policies and staff of public institutions may impact project schedule and successful implementation of management plans.	M o d e r a t e - h i g h	For good governance and interinstitutional relations a management matrix will be constructed for each component and instruments will be elaborated, such as cooperation agreements between the executing agency and partners. This process will link tasks to responsible entities and financial resources, and will facilitate monitoring and reporting with lessons learnt.
Climate change may generate unexpected changes in the flood pulse regime of wetlands impacting all extractive activities.	M o d e r a t e - h i g h	The effects of climate change on Amazonian ecosystems will be a theme of discussion during courses and the technical support for implementation of management plans. Strategies for adaptation of management plans will be defined.

Difficulty in engagement of managers and community organizations impacts continuity of management plans.	Moderate-low	The project will work with managers and community organizations that have already demanded support to develop management plans. To engage new managers capacity building activities will use participatory teaching and mapping tools.
Difficulty in achieving gender equality goals.	Moderate-high	Vacancy in all project activities will be made available for women, and training will be adapted to respect social contexts where women participate.
Illegal extraction and low prices of illegal products may impact the success of sustainably managed biodiversity products.	Moderate-high	The project will map bottlenecks in the biodiversity value chains and develop a mitigation plan to increase value of sustainably extracted products.

<p>The evolution of the COVID-19 Pandemic may affect the project design phase activities.</p>	<p>M o d e r a t e</p>	<p>During project preparation the COVID-19 pandemic may affect travel, meetings and consultations. Mitigation measures include the identification alternatives to develop meetings and consultations. Travel will be limited to the minimum and virtual meetings will be held whenever possible. Only when they are necessary, face-to-face meetings will be held following strictly national guidance and biosecurity measures to prevent transmission of the virus. During project preparation, the evolution of the pandemic will be monitored to include mitigation measures in the design of the project.</p> <p>Regarding the impacts caused by the COVID-19 crisis on project preparation, the project will deal with them developing an adaptation of the security protocol described in the Human Resources Guidelines for Offices during the Novel Coronavirus (COVID-19) pandemic by the FAO (online available at <a href="https://bit.ly/2Hoj2Qz">https://bit.ly/2Hoj2Qz</a>) taking into account the particular characteristics of inhabitants and environmental conditions in the target region. We have also noticed during project preparation that transport and face-to-face meeting costs have increased, so this will be considered in the preparation budget.</p>
<p>Epidemiological risks (including the development of the COVID-19 pandemic) that can create restrictions for the development of project activities.</p>	<p>M o d e r a t e</p>	<p>The project will start implementation in 2022, when the COVID-19 is expected to be under control. Nevertheless, the evolution of the pandemic will be monitored and mitigation plans will be carried out during project preparation considering the following important aspects:</p> <p>While the pandemic continues, community-level and stakeholder consultations will be held virtually whenever possible. Alternatives will be considered when necessary and the design of workshops, courses and meetings will include protocols to minimize risks of contagion and spread of the virus.</p> <p>During the project preparation and development, activities will be tracked to generate information for the mitigation of current and future risks and identify recovery measures.</p> <p>The participatory management plans and improved livelihood opportunities could be affected by the evolution of the COVID-19 pandemic or the emergence of other similar infectious diseases as economic activity may be restricted by the pandemic. To mitigate this risk, the activities of the project will consider the lessons learned from the current COVID-19 to raise awareness among stakeholders about the need of developing innovative channels for economic activity.</p>

Opportunities to mitigate impacts, deliver GEBs and contribution to green recovery and building back better

Altogether, the components of the project constitute a series of activities that will promote transformational change to balance natural and human systems so that natural resources are used in a sustainable manner in line with national priorities. The global environmental benefits derived from the project, including improved management of 972,776 ha in 17 protected areas, and 33,242 in 3 lake complexes will interact with the implementation of participatory management plans and improved livelihood opportunities in an effort to boost the economy in build back better approach to recover from the adverse effect caused by the on-going COVID-19 pandemic.

## 6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

90. **Project organizational structure:** The project will be executed by the Ministry of Science, Technology and Innovations (MSTI) and Mamirauá Institute. The MSTI will have the overall project responsibility, will provide strategic guidance, and will ensure country ownership. Mamiraua will be the entity responsible of coordinating project conception, development, design, monitoring and implementation, as well as coordinating tasks with participating institutions, local organizations, government agencies and others. FAO will be the Implementing Agency, responsible for technical advice on project development, design, and monitoring. A detailed organizational structure will be developed during project preparation.

91. **Coordination with other GEF projects:** The project will coordinate with other GEF-financed projects with the objectives of identifying opportunities and facilitate mechanisms to achieve synergies. This collaboration will be undertaken through: i) formal and informal communications between GEF Agencies and executing partners of other programs and projects; ii) annual coordination meetings; iii) specific meetings on technical matters; iv) meetings and activities to exchange experiences and lessons. In particular, the project will develop collaboration mechanisms with the following projects:

92. The proposed Project is aligned with both phases of the GEF-Funded Amazon Sustainable Landscapes Program, (ASL-I and ASL-II). While there is overlap in some of the targeted protected areas, the project will work with the World Bank and its ASL partners to ensure both projects are truly complementary and prevent that GEF resources are spent twice on the same activities.

93. In order to identify the complementarities between both projects, the FAO will create a **working group** during project preparation that will include key actors from ASL I and II. This group will include the World Bank (as Implementing Agency for ASL) and other executing agencies for ASL (FUNBIO, CI-Brazil) and will provide advice to the Project Design Team as it carries out baseline and socioeconomic assessments, and defines project interventions in consultation with local communities. The goal of the working group is to ensure that project activities do not overlap in geographical areas targeted by both the ASL and the proposed program.

94. During project implementation, the proposed project will establish a **Consultative Committee** which will include Mamiraua as project executing agency for the proposed project and state level governments, local stakeholders, and executing partners for the ASL programme to make sure that Annual Work Plans and budgets are coordinated and complementary. For instance, if the ASL Project will support fisheries agreements in a particular site, the proposed project can support investments in processing or any other value chain improvement, or vice versa. This committee will provide a space for executing agencies for both programmes to coordinate efforts on the ground—in other words, Mamiraua will have an opportunity to work closely with CI-Brazil and FUNBIO on topics such as the development of PA management plans and CI-Brazil on the development of productive value chains and align efforts and resources. In addition, the project will invite the World Bank and other central government stakeholders in the ASL program to participate in a **Strategic Advisory Committee** when it is operational to ensure high-level coordination.

95. Finally, the World Bank has invited Mamiraua to participate in the Knowledge Management platform established within the ASL programme (FAO is already participating as Implementing Agency for the Peru ASL Child project). This platform provides a space to exchange lessons learned and best practices from FAO GEF support that can be replicated across the ASL. This could include, for instance, Mamiraua's work on community monitoring or citizen



science. Mamiraua has offered its installations to support knowledge sharing (i.e. short courses, protocol design) for partners and stakeholders in the ASL.

96. GEFID No. 10660 (with IADB as IA): Unlocking Private Capital for Biodiversity through the Bioeconomy in Amazon Basin Countries. The project aims to de-risk and enable private investments in the bioeconomy in up to three Amazon's countries. This will be done by demonstrating innovative and replicable financing models (Special Purpose Vehicles, SPVs) which will enable the pooling and blending of capital from different sources with varying risk appetite with a view of mobilizing private investments in the bioeconomy and meet the multiple financing needs of this still nascent market. The project will contribute to preserve and enhance target Amazon countries' natural capital by addressing the root causes of deforestation and land degradation and halting biodiversity loss, while boosting their sustainable recovery from the COVID-19 crisis. De-risking private investments and nurturing the bioeconomy ecosystem in Amazonia will act in favor of the biodiversity value chains supported in the project being proposed here, and may facilitate access of biodiversity products to larger markets.

97. GEFID No. 10531 (with World Bank as IA): Integrated watershed management of the Putumayo-Iça river basin. The objective of the project is to Improve the capacity of Brazil, Colombia, Ecuador and Peru to manage freshwater ecosystems and aquatic resources of the Putumayo-Ica watershed in the Amazon. This will be achieved by (i) enhancing management and accessibility of traditional and scientific knowledge and information, (ii) Improving governance for integrated water resource management and equitable access to resources by women and other vulnerable communities, (iii) Reducing impacts from water and environmental pollution, associated to mercury and other contaminants, from legal and illegal activities, and (iv) supporting freshwater fisheries management initiatives, including adding value and commercialization of fisheries and other natural resources. Watershed management and empowering local vulnerable communities that depend on the Amazon river basin is at the heart of the project being proposed here. Activities and lessons learned in both projects will certainly add to the impact of both projects. Mamirauá Institute has been invited and is already collaborating with the design and planning of this initiative, under the invitation of the Amazonas state government.

98. GEFID 5091. (UNDP/EMBRAPA) Mainstreaming Biodiversity Conservation and Sustainable Use into NTFP and AFS Production Practices in Multiple-Use Forest Landscapes of High Conservation Value. The objective of this project is to conserve the biodiversity of Brazilian multiple-use forest landscapes of high conservation value by strengthening the sustainable use management framework for non-timber forest products (NTFP) and agroforestry systems (AFS). The proposed project has potentially two very clear points of interaction with this project as both management NTFP and AFSs are both important themes in both projects. In addition, the project will build on lessons learned and share experiences with projects currently under implementation or recently completed-namely GEFID 9272: Amazon Sustainable Landscapes Program (Phase 1); GEFID 9617: Comm-IAP: Taking Deforestation Out of Commodity Supply Chains (with UNDP as IA), GEFID 9413: Realizing the Biodiversity Conservation Potential of Private Lands.

## 7. Consistency with National Priorities

### Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions

Yes

**If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc**

96. The project is aligned with the Strategy and National Action Plans for Biodiversity, which has the objective of protecting biodiversity and natural ecosystems of Brazil.

97. The main objective of EPANB is "the promotion, in an integrated form, of conservation of biodiversity a sustainable utilization of its components, with fair and equitable partition of benefits derived from the utilization of genetic resources, of components of the genetic patrimony and of traditional knowledge associated with these resources". For this purpose, the EPANB is structured in components (thematic axes) that orient its implementation. This proposal is aligned with four thematic axes: Conservation of biodiversity; Sustainable utilization of biodiversity components; Access to genetic resources and associated traditional knowledge, and equitable partition of benefits; Education, public awareness, information and communication about biodiversity, Legal and institutional strengthening for management of biodiversity. Transversely it also touches on two other axes: Knowledge of biodiversity; and Monitoring, evaluation, prevention and mitigation of impacts on biodiversity.

98. The Project is also aligned with the Convention on Biological Diversity (CBD) which has three main objectives: the conservation of biological diversity; the sustainable use of the components of biological diversity; and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

99. The project promotes the substitution of predatory activities with sustainable protocols for utilization of biodiversity, in activities executed in multi-stakeholder arrangements with representatives from traditional populations, government and private entities. This process is aligned with actions proposed for Aichi Goal 18, and to a lesser extent to Aichi Goal 2.

100. The project involves indigenous peoples, traditional communities and small scale farmers with key links in productive sectors that keep the forest standing, generating income and reducing pressure on the environment, and at the same time valuing and protecting traditional knowledge. Community-based biodiversity management protocols, one of the tools used in this project, is a recognized tool by the CBD and the Nagoia Protocol.

101. Interventions of this project strengthen the strategic and political role of traditional people, including indigenous and non-indigenous populations. They are therefore in line with law n 13.123/2015 that guarantees that protection of traditional knowledge of these populations, the right to participate in decision making at the national level in matters concerning the conservation and sustainable use of biodiversity and traditional knowledge, and the free exchange of diffusion of genetic patrimony and of associated traditional knowledge practiced internally for their own benefit and based in uses, costumes and tradition.

102. The development of management protocols, foreseen in this project, meets the specific goals of EPANB. The EPANB Action Plan foresees that government collegiate bodies and organized civil society will be involved in the formulation and execution of training plans in ABS and Community Protocols and in the training of multipliers on the theme. Community Protocols are documents generated from participatory processes of discussion and deliberation, where a set of community rules regarding the use and management of territories, rules regarding the exploitation of their natural resources and safeguarding traditional knowledge are defined and agreed upon by the residents of the communities involved.

103. The project is in line with Law No. 9,985, of July 18, 2000, which instituted the National System of Conservation Units (SNUC), and consists of a set of federal, state, municipal and district Conservation Units, arranged in 12 categories whose specific objectives differ in the form of protection and permitted uses. The planned actions aim to enhance the role of Conservation Units in the sustainable use and conservation of biodiversity.

104. Mamirauá Institute is a member of the International Union for Conservation of Nature (IUCN) and all actions taken are in line with the IUCN mission, seeking to influence, encourage and assist societies for nature conservation, and to ensure that any and all use of natural resources is equitable and ecologically sustainable.

105. The project has a strong presence in two wetlands of international importance (RAMSAR), in compliance with the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), the Convention on Migratory Species (CMS), the Convention for the Protection of the World, Cultural and Natural Heritage (WHC) and the United Nations Framework Convention on Climate Change (UNFCCC), the International Plant Protection Convention (IPPC) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

106. The project is aligned with the Sustainable Development Goals, specifically to the objectives: 1. Eradication of poverty - developing products or services that benefit and improve the quality of life of economically vulnerable groups; 2. Zero hunger and sustainable agriculture - for supporting small food producers and family farming; 3. Health and Well-being - by improving income, and improving the access of its employees to health care, sanitation infrastructure and drinking water and clean energy for domestic use and for sustainable production; 4. Quality education - through technical and specialized training for productive actions and training for management, ensuring that rural producers have access to professional training and learning opportunities; 5. Gender Equality - seeking equal opportunities for professional growth and political representation; 6. Potable water and sanitation - for implementing water management strategies that are environmentally sustainable and economically beneficial in the hydrographic region where it operates; 7. Clean and Accessible Energy - implementing demonstrative and experimental models of equipment and productive processes with greater energy efficiency and with renewable sources; 8. Decent work and economic growth and 12. Responsible consumption and production - strengthening the productive chain of sustainable nature products; 13. Action against global climate change, 14. Life in water and 15. Terrestrial life - for implementing policies and practices to protect natural ecosystems.

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

107. This project's knowledge management approach has the goal of keeping track of project interventions and impacts to allow replication in other areas of Amazonia, and, potentially, in other biomes. Activities conducted within Component 3 will record project activities and promote a continuous learning process, creating a solid background for project scaling as well as fundamental knowledge for communication and political advocacy.

108. Under this component we intend to raise awareness about the importance of the amazon flooded environments and its biodiversity through strategic communications and publications that disseminate project activities and experiences. Information will be disseminated in fairs, participants websites and social media, and other media outlets. The project will invest approximately US\$ 589,000 from GEF resources to achieve this goal.

109. The project will also promote an exchange process of learning between 30 women and men leaders, assessment and regularization of the legal and accounting framework of organizations aligned with training and strategies on: finance, administration, accounting, preparation of plans, guidelines for accessing markets and institutional relationships.

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification\*

PIF	CEO Endorsement/Approval	MTR	TE
High or Substantial			

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

Additional comments from FAO's Env and Social Management team:

The project is aiming to promote and improve participatory management of natural resources as a means of sustainable economic development and to conserve biodiversity and maintain carbon stocks, avoiding greenhouse gas emissions. The project will intervene in multiple protected areas and buffer zones in the Amazon Wetlands. The project will implement capacity building programs and provide technical support on agroforestry, non-timber products, forestry, pirarucu, caiman and mangrove crab management, as well as community-based tourism within these protected areas which will not have any negative impacts. **However, the project is also planning to build and equip physical infrastructures within the PAs and their buffer zones** such as manioc flour production units, fruit pulp production units and floating fisheries processing units. **According to the ESMG this qualifies the risk as “high” and requires the preparation of a full environmental and social impact assessment (ESIA).** The project also involves indigenous peoples and traditional communities which requires the preparation of an **Indigenous Peoples Plan (IPP)** if a substantial number of project beneficiaries are indigenous and to follow a **Free, Prior and Informed Consent process (FPIC)** for all activities targeting indigenous peoples.

Based on the above, the high risk categorization is justified. I suggest to endorse the risk as is in FPMIS and recommend for the project team to plan the preparation of the required safeguards instruments (ESIA, IPP and FPIC) for the PPG stage.

Safegua rd Trigg ered	Risk Identified	Answer	Risk Clas sification	Reference Guidance	Additional Description (if any)
					In 1996 researchers from Mamirauá Institute were p ioneers in introducing a n ew paradigm in protected area management in Brazi l and in the Amazon, prop osing and implementing t he first Sustainable Devel opment Reserve of Brazil. This reserve was created under the rationale of prot

2	<p>2.1 - Would this project be implemented within a legally designated protected area or its buffer zone?</p>	Yes	High	<p>A full environmental and social impact assessment is required. Please contact the ESM unit for further guidance.</p>	<p>ecting biodiversity without relocating local human populations. These people would actively participate in the management of the protected area and at the same time improve their livelihoods by sustainably using biodiversity. So, this project will follow this experience to gain scale and implemented a successful model of natural resource management in Conservation Units and landscapes, insertion of local community and reduction anthropic pressures in the Amazon territory.</p>
9	<p>9.1 - Are there <i>indigenous peoples</i>* living <i>outside the project area</i>** where activities will take place?</p> <p>*FAO considers the following criteria to identify indigenous peoples: priority in time with respect to occupation and use of a specific territory; the voluntary perpetuation of cultural distinctiveness (e.g. languages, laws and institutions); self-identification; an experience of subjugation, marginalization, dispossession, exclusion or discrimination (whether or not these conditions persist).</p> <p>**The phrase "Outside the project area" should be read taking into consideration the likelihood of project activities to influence the livelihoods, land access</p>	Yes			<p>Mamirauá develops projects with indigenous populations for training and capacity-building in the management of natural resources, and has the support of the National Indian Foundation. This project will use this experience to gain scale and improve natural resource management in indigenous communities.</p>

s and/or rights of Indigenous Peoples  
&apos; irrespective of *physical distanc*  
e. In example: If an indigenous commu  
nity is living 100 km away from a proje  
ct area where fishing activities will affe  
ct the river yield which is also accesse  
d by this community, then the user sho  
uld answer "YES" to the question.

9

9.2 - Are there indigenous peoples livin  
g in the project area where activities wi  
ll take place? Yes

Moderate

A Free Prior and Informed Conse  
nt process is required.

**If the project is for indigenous pe  
oples**, an Indigenous Peoples&ap  
os; Plan is required in addition to  
the Free Prior and Informed Cons  
ent process.

Please contact the ESM/OPCA u  
nit for further guidance.

In cases where **the project is for  
both, indigenous and non-indigen  
ous peoples**, an Indigenous Peop  
les&apos; Plan will be required o  
nly if a substantial number of ben  
eficiaries are Indigenous People  
s. project activities should outlin  
e actions to address and mitigate  
any potential impact.

Please contact ESM/OPCA unit f  
or further guidance.

Mamirauá develops proje  
cts with indigenous popul  
ations for training and cap  
acity-building in the mana  
gement of natural resourc  
es, and has the support of  
the National Indian Found  
ation. This project will use  
this experience to gain sc  
ale and improve natural r  
esource management in I  
ndigenous communities.

## Supporting Documents

Upload available ESS supporting documents.

Title	Submitted
FAO ES Screening Checklist Brazil	
PIF Brazil FAO 690442 - Climate Risks Screening Summary	



### Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Marcos Cesar Ribeiro Barretto	General Coordinator for External Funding	Ministry of Economy	9/26/2020

#### **ANNEX A: Project Map and Geographic Coordinates**

Please provide geo-referenced information and map where the project intervention takes place

**PROGRAM/PROJECT MAP AND GEOGRAPHIC COORDINATES**

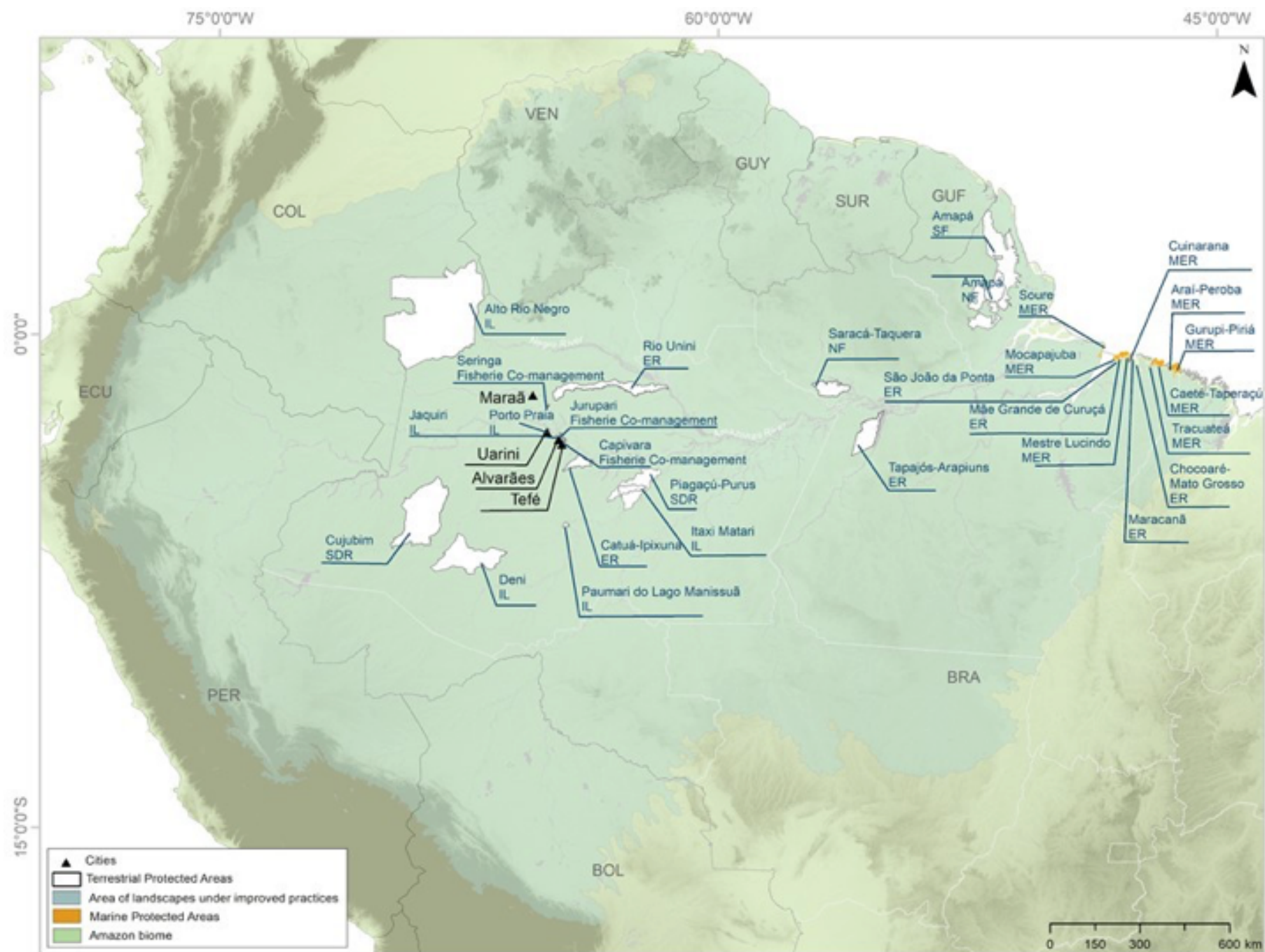


Figure 1. Cities, protected and non-protected areas directly impacted by the project (see Figure 2 for detail of non-protected areas impacted by the project).



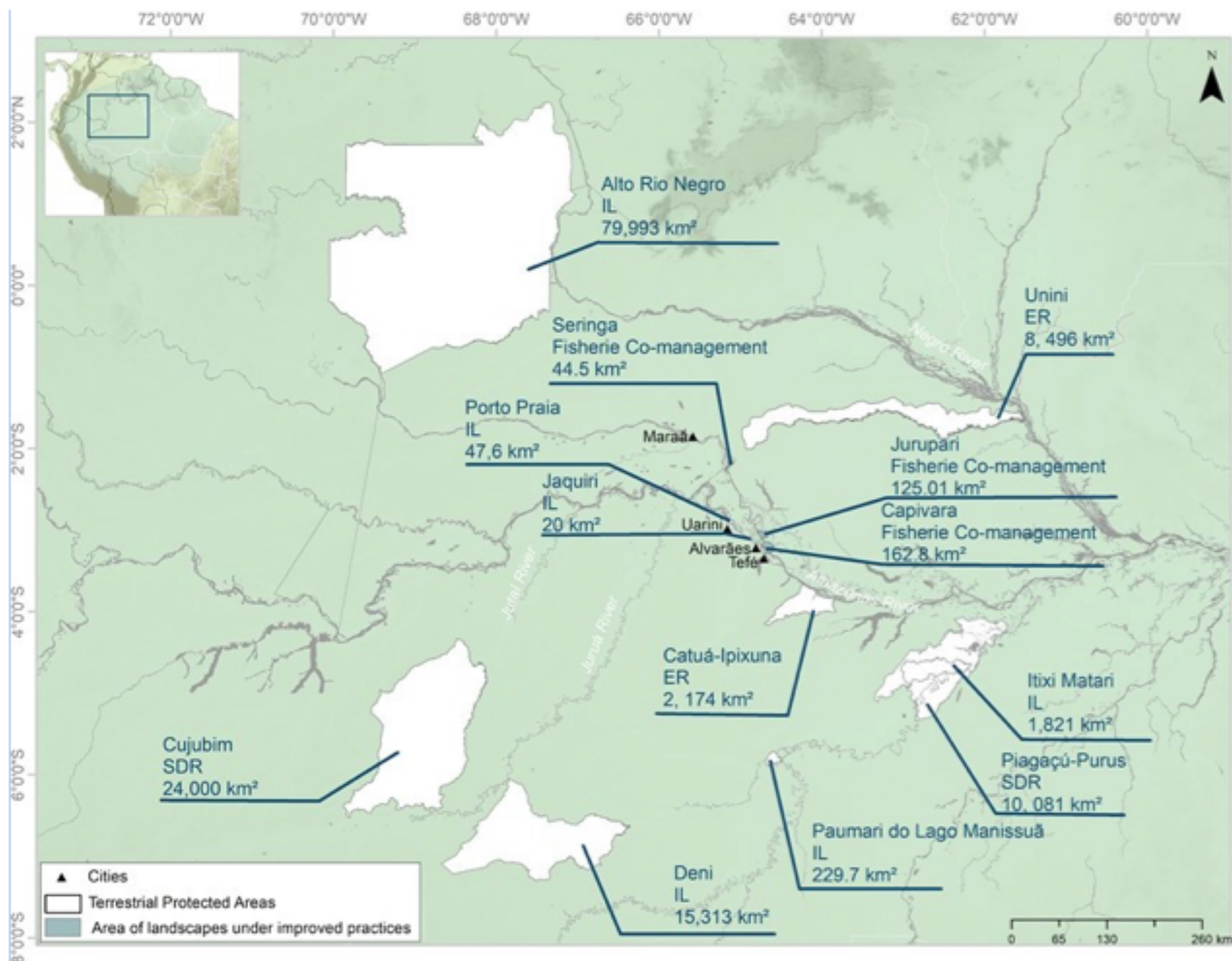


Figure 2. Zoomed view of cities, protected and non-protected areas directly impacted by the project in Amazonas State, Central Amazon, Brazil.







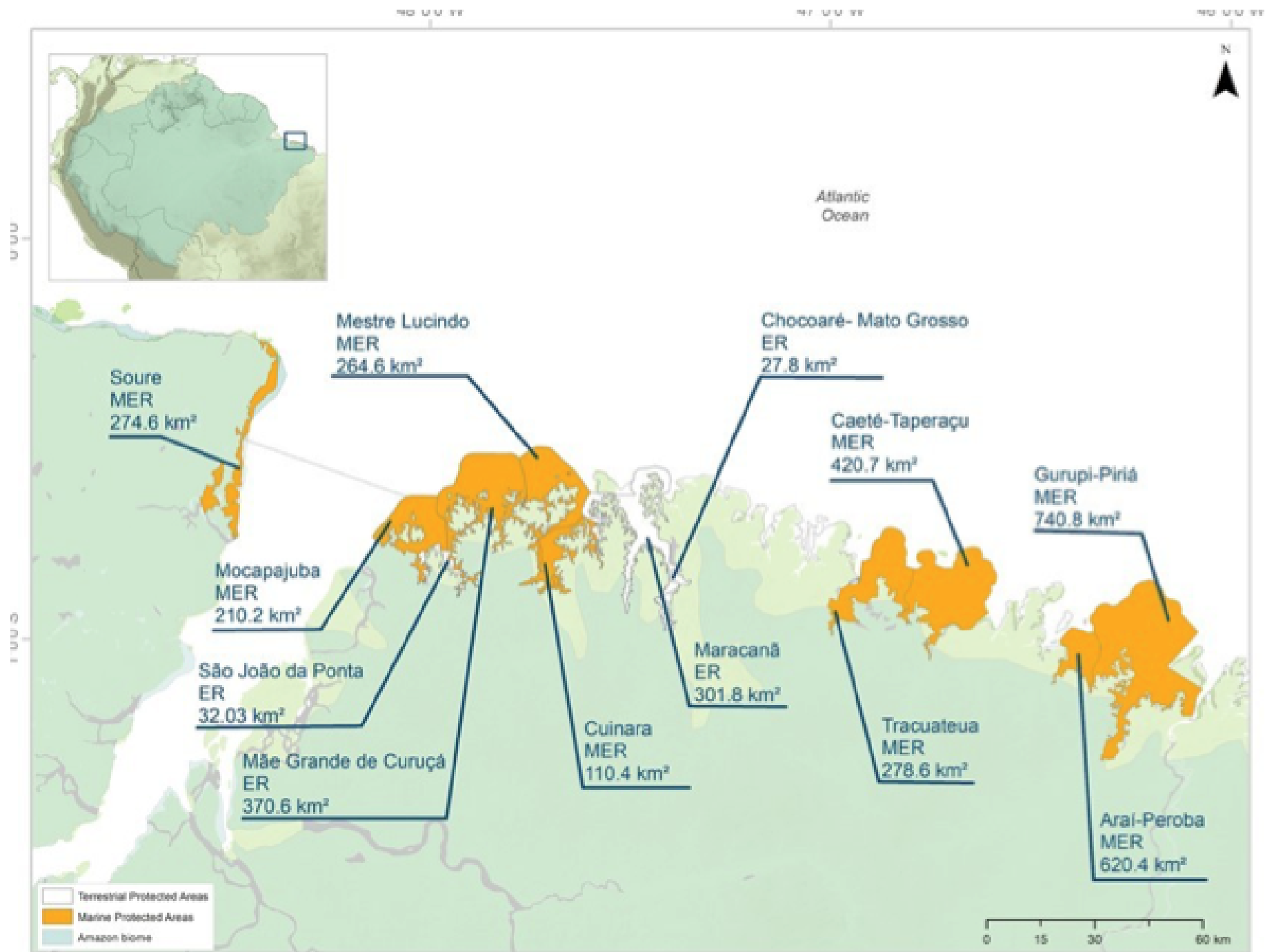


Figure 3. Zoomed view of terrestrial and marine protected areas impacted by the project in the coast of Pará State, Brazil.



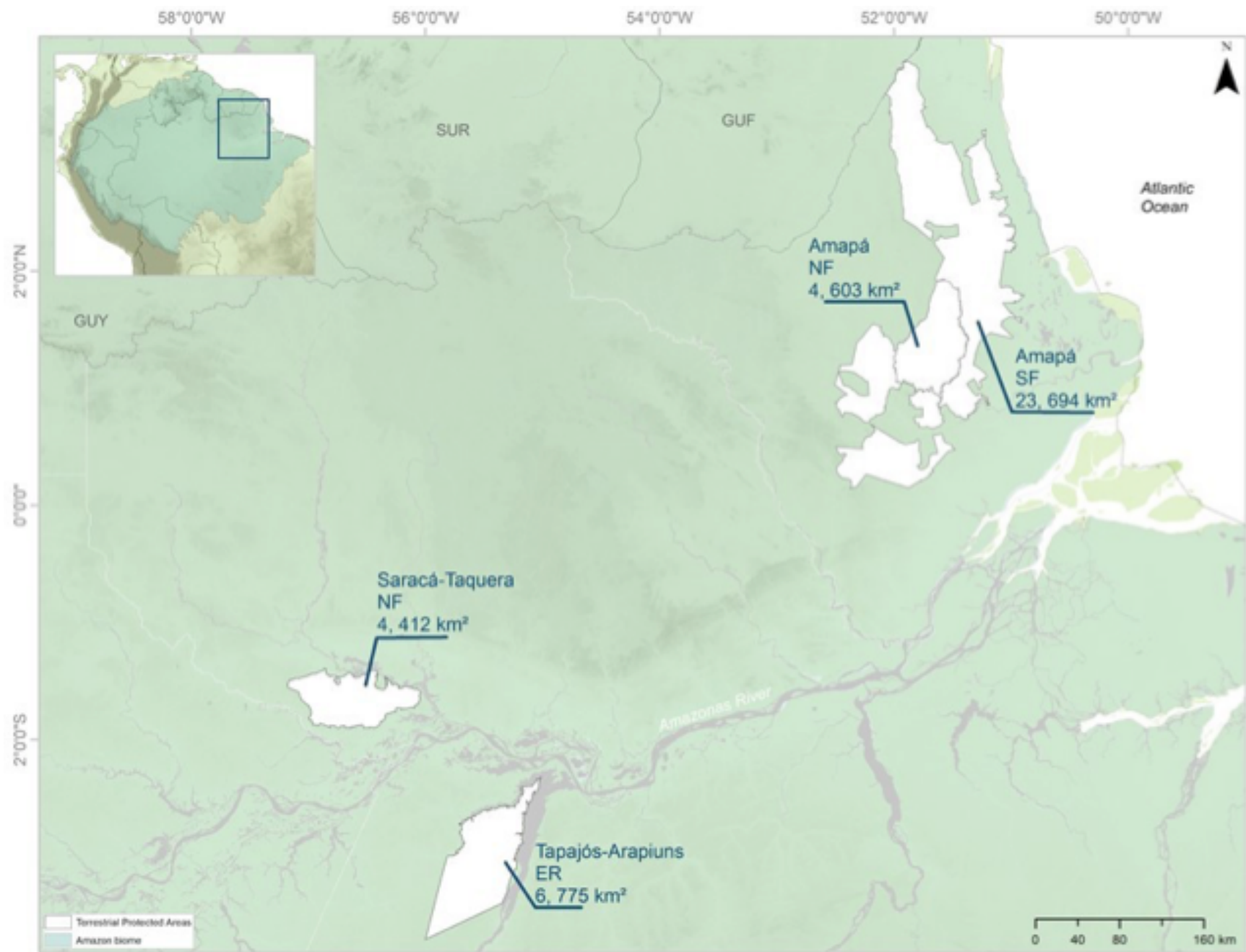


Figure 4. Zoomed view of terrestrial protected areas impacted by the project in Central Pará and Amapá States, Braz

