São Tomé Obô Natural Park (PNOST) Management Plan 2020-2025

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Front picture: Obô Natural Park - Pico de São Tomé @BirdLife International

APPROVALS

Endorsement / Signatures by relevant authorities (+ prologue signed by the Minister of Agriculture)

EXECUTIVE SUMMARY

To be completed in the final version of the MP

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ACRONYMS AND ABBREVIATIONS

CBGG	Gulf of Guinea Biodiversity Centre
CE3C	Centre for Ecology, Evolution and Environmental Changes
CEPF	Critical Ecosystem Partnership Fund
CR	Critically Endangered (IUCN Threat Category)
DD	Data Deficient (IUCN Threat Category)
DFB	Directorate for Forests and Biodiversity of São Tomé & Príncipe / MAPDR
DGA	General Directorate for the Environment of São Tomé & Príncipe / MOPIRNA
EN	Endangered (IUCN Threat Category)
EU	European Union
FAO	UN Food and Agriculture Organization
FNA	National Environment Fund (Fundo Nacional do Ambiente)
GDP	Gross Domestic Product
GOV-STP	Government of São Tomé & Príncipe
HCV	High Conservation Value (forest)
HDI	Human Development Index
IAS	Invasive Alien Species
INE	National Institute of Statistics (Instituto Nacional de Estatística)
IUCN	International Union for the Conservation of Nature
KBA	Key Biodiversity Areas
LC	Least Concern (IUCN Threat Category)
M&E	Monitoring & Evaluation
METT	GEF PA Management Effectiveness Tracking Tool
MAPDR	Ministry of Agriculture, Fisheries and Rural Development
MARE	Centre for Marine and Environmental Sciences (Centro de Ciências do Mar e do Ambiente)
MOMS	Management Oriented Monitoring System
MOPIRNA	Ministry of Infrastructure, Public Works, Natural Resources and Environment
MOU	Memorandum of Understanding
MP	Management Plan
MPA	Marine Protected Area
NGO	Non-Governmental Organization
NT	Near Threatened (IUCN Threat Category)
ONP	Obô Natural Park
ONP-WG	Obô Natural Park Working Group
PA	Protected Area
PNOST	São Tomé Obô Natural Park (Parque Natural Obô de São Tomé)
PNOT	National Land Use and Management Plan (Plano Nacional de Ordenamento do Território)
PNP	Príncipe Natural Park (Parque Natural do Príncipe)
SPEA	BirdLife Portugal (Sociedade Portuguesa para o Estudo das Aves)
ST	São Tomé
STP	São Tomé & Príncipe
SWOT/TOWS	Strengths, Weaknesses, Opportunities and Threats analysis
UNDP	United Nations Development Programme
UNDP-GEF	UNDP Global Environmental Finance Unit
UNESCO	United Nations Educational, Scientific and Cultural Organization
VU	Vulnerable (IUCN Threat Category)
WACA	West Africa Coastal Areas Management Program

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PART I – METHODOLOGICAL APPROACH FOR THE REVISION OF THIS PLAN

The Democratic Republic of São Tomé and Príncipe (STP) is a Small Island Developing State located off the coast of western central Africa in the Gulf of Guinea (Figure 1). STP forms part of a chain of volcanic islands, from Bioko (Equatorial Guinea), Príncipe, then São Tomé straddling the equator, and finally Annobón (Equatorial Guinea). The São Tomé Obô Natural Park (PNOST) is located in the island of São Tomé (Figure 1).

Figure 1. STP location in the Gulf of Guinea (left), close up of STP islands (middle) and location of the PNOST in the island of São Tomé (green, right)

STP is a Least Developed Country that achieved independence in 1975. Its total land area is 1001 km^2, of which 859 km^2 are occupied by the main island São Tomé, with a rugged relief and the highest elevation point of 2024m a.s.l. (Pico de São Tomé, Figure 1).

The population of the island of São Tomé is estimated at 201,462 inhabitants (INE projections 2020), with a density of c. 224 inhabitants/km^2 (UNPD 2019). More than half of the population is less than 25 years old and the population is growing at around 1.9% annually (UN Population Division). 66% of the population lives below the poverty level (UNPD 2019). 73.6% of the population lives in urban areas (UNPD 2019), while an important part of the rural population lives in the areas surrounding the PNOST and along the coast. While there was no permanent population inside the PNOST at the time of its creation, few temporary and permanent settlements appeared in some areas of the Park in recent years.

The contributions by sectors to the GDP in 2017 (USD 393 million, WorldBank) were 73% from services (incl. 14% from tourism), 15% from industry (light construction, textiles, soap, beer, fish processing) and 12% from agriculture. Plantation agriculture accounts for the occupation of 60% of the active population (de Carvalho, 2018), both through formal and unformal employments. Main agricultural exports include cocoa beans, coconut/copra, coffee, palm oil/kernels, cinnamon, pepper, and vanilla. Tourism has gained particular attention on the archipelago, given its rich cultural heritage, well-preserved landscape and high level of species endemism. The priority of STP Government is to become an international logistical hub (e.g., build a deep-water port), and further develop fisheries, plantation agriculture and explore offshore oil & gas. Given that population growth and short-term economic development objectives are likely to lead to the environmental degradation and further encroachment of PAs, reconciliation with sustainable development and nature conservation will become a challenge.

In 2006, under the EU-funded ECOFAC programme, the majority of the best-preserved forests on the two main islands were designated as two Natural Parks (Law n. º 06/2006/Lei do Parque Natural Obô de São Tomé & Law n. º 07/2006/Lei do Parque Natural Obô do Príncipe). The boundaries are well defined in the respective laws and since it was established, the PNOST had two management plans for the periods 2009-2014 and 2015-2020.

Based on the hereafter described methodological approach (**Part I**), the current Management Plan is the result of a descriptive analysis of the current state of PNOST biodiversity and threats, emphasizing only the most recent updates since the last Management Plan (**Part II**); a prospective analysis of updated management strategies and objectives, in the light of the previous plan implementation and results assessment (**Part III**); and the strategic and operational planning for PNOST management for the next five years 2021-2025 (**Part IV**).

The Management Plan revision was supported by the EU/ECOFAC6 project and initiated in the second semester 2020, delayed by COVID19 restrictions. After the development of the road map, outline, context and identification of relevant stakeholders, the strategic planning work followed a participatory approach, including the following steps (see Annex 1 for more details).

1) On August 2020, the "Obô Natural Park Working Group" (ONP-WG), was created to work on the PNOST Management Plan but also to improve coordination and ensure coherency and communication in between the different sectors and structures of public and private administration having a role over the protected area and broader biodiversity conservation in São Tomé (Annex 1). The role of the ONP-WG will also extend beyond the Management Plan, for further orienting documents for the PNOST (METT annual assessment for the PNOST, PNOST Sustainable Business Plan, National Action Plan for Ecotourism in Protected Areas, PNOST Management Plan update, etc.). The ONP-WG counts 10 representatives from 10 environment related institutions (see Table 1), and guest or experts can be invited for specific meetings.

Table 1. ONP-WG members

Institution	*Name*	*Function*
DGA - Department of Nature Conservation and Biodiversity Management	Victor Bonfim	Nature Conservation Focal Point
WACA project	Abnilde Lima	Segment and Assessment Officer (Geographer)
DFB - Monitoring, Inspection and Control Department	Páscoa Costa	Head of Department
DFB - PNOST department	Aurélio Rita	Director
Project to Support Marketing, Agricultural Production and Nutrition (COMPRAN)	Carminda Veigas	Director
Agency for the Promotion of Trade and Investment (APCI)	Ernelstelma C. Barreto	Chief of Services and Free Trade Zone
Responsible and Sustainable Tourism Platform (PTRS)	Eugênio Neves	President
Federation of Non-Governmental Organizations of STP (FONG)	Eduardo Elba	Executive Secretary
University of São Tomé and Príncipe	Hugulay Maia	Professor/Biologist & São Tomé Biologists Association Focal Point
BirdLife International	Conceição Neves	São Tomé Project Leader
+ Guests (interested parties) – invited on a meeting basis		

2) In 2019, scientists and experts who already published work or performed fieldwork about biodiversity and threats in STP were consulted through a three-fold online survey, to (i) gather recent literature about the PNOST and its surrounding forests, (ii) inform experts about the revision of the PNOST Management Plan in 2020/2021 and (iii) identify experts interested to contribute to the revision of the Management Plan. 21 experts were identified with this survey, and 23 relevant local stakeholders from public and private institutions, civil society, etc. were identified for their direct or indirect role in STP biodiversity conservation or protected area management, making a total of 44 stakeholders invited to contribute to this Plan (Annex 3).

3) Based on available literature, in consultation with relevant actors and geographers (in particular the DGA environment observatory in São Tomé) and building on recent findings (e.g. São Tomé land-use map by Soares 2017), biodiversity action plans (e.g. BirdLife 2014, Panisi et al. 2020), technical spatial planning

documents like the 2020 National Spatial and Land-Use Plan (PNOT 2020) recently endorsed by the STP Government, and other recent studies such as the High Conservation Value forests preliminary identification by BirdLife International and its review through public consultations led by the DGA; a scenario analysis was developed for the zoning of the PNOST and its surrounding forest, formerly called but never endorsed "Buffer Zone". High-resolution maps were produced based on the approved zoning scenario (see section III.4 of this Plan).

4) A multi-sectoral team led by the DGA held nine (9) workshops with communities neighbouring the PNOST, in its surrounding forests, in particular where it is proposed to create HCVs, in São Tomé island. The consultation process included district/local authorities, community leaders and key stakeholders from the identified communities, and were facilitated by community promotors. The consultation identified the main challenges faced by the communities and collected the main sensitivities/expectations of the populations in relation to the PNOST and buffer zone/HCVs limits and management. Conclusions of the consultations are in Annex 4.

On August 27th and 28th, 2020, combined presential and online workshops (due to covid19 restrictions) officially launched the revision of the PNOST Management Plan, presenting the revision methodology to the ONP-WG and to the identified stakeholders (Annex 3). Participative workshops series with the ONP-WG started post COVID19 confinement, from September 2020, and their outputs led to each section of this document (all workshops minutes available in Annex 3). Compilation of the Management Plan document was facilitated by BirdLife International office in STP, including all recommendations from the ONP-WG, experts and interested parties on intermediate draft versions of this Plan, until its validation by all stakeholders. This Plan was validated and endorsed by STP government during the validation workshop organized in April 2021, hosted by the ONP-WG and facilitated by BirdLife International (Annex 4).

PART II – CONTEXT, VALUES AND CURRENT CHALLENGES OF THE PARK

This section of the Plan (up to II.4) consists of a summary of the PNOST characteristics, physical, biological and socio-economical context, and the most recent updates in terms of knowledge and management recommendations arising from recent scientific studies and technical reports. For full details on the PNOST characteristics, ecological and social context, please refer to the previous management plans (Albuquerque et al. 2009; 2015) and to the recent short review of STP biodiversity compiled by BirdLife International (BirdLife International, 2019).

II.1 Management history, delimitations and governance

II.1.1. Summary of management history

The Basic Law of the Environment (Law n°10/1999) and the Law of Conservation of Fauna, Flora and Protected Areas (Law n°11/1999), paved the way to the designation of terrestrial protected areas, acknowledging STP unique natural heritage, wealth of endemism and intrinsic value. It was concretised in 2006, with the creation of the São Tomé Obô Natural Park (PNOST, Law n°6/2006), which responded to the nationally recognised need of establishing a National System of Protected Areas.

The name "Obô" used in the "São Tomé Obo Natural Park" name, means "virgin forest" in forro, the main dialect originating from the island of São Tomé; and applies to the entire area of protected and/or native forest. It is a widely used term across the island, already well associated with the Park area, ensuring a good appropriation of its natural patrimony by the local population.

In 2009, the first Management Plan for the park was developed for the period 2009-2014, paving the way to better protection of its natural patrimony. The second Management Plan, revised in 2015 for the period 2015-2020, was an adaptation of the previous one, given that most management objectives were still to be met. The main objectives of the 2015 PNOST Management Plan were to:

- Reduce illegal logging and its impacts on the forest ecosystem;
- Prevent the clearing of new forest areas;
- Control the negative impacts of invasive species;
- Protect areas of distribution of endemic and/or threatened species and improve the conservation of ecosystems and endemic species, in and around the PNOST, and the protection of important areas for Critically Endangered species;
- Reduce collection and capture of protected species (especially endangered species);
- Control the use of Park facilities (trails, infrastructures), particularly for tourism purposes.

From 2018, the 6th phase of the EU funded ECOFAC project started in STP, implemented by a consortium of international conservation and/or development NGOs, namely Oikos, SPEA, RSPB and led by BirdLife International, well recognized for its nature conservation work, in particular avifauna; to support and improve the management of STP Parks, through a co-management agreement between BirdLife and the STP government. The main management interventions in the PNOST to date are summarized in Table 2.

Table 2: History of main PNOST Management Intervention since its creation (adapted from Albuquerque et al. 2015)

Year	*PNOST Management Interventions*	*Description and Results*
2006	Creation of the PNOST (law n°6/2006)	STP integrates RAPAC with a pilot area (site no. 31, Obô Natural Park)
	Creation of Parks Directorate	Definition of the Parks' team and organization
	Recruitment of Park Staff	State workers recruited (in insufficient number)
2009	Elaboration of the 1st Management Plan 2009-2014 (ECOFAC4)	Zoning and Regulation of the Natural Park, for 5 years
2010	Proposed decree for formal approval of the 2009 Management Plan	Council of Ministers in June 2010 decided to approve the decree proposal; however, due to political changes, this approval never materialized
2015	Elaboration of Management Plan 2015-2020 (ECOFAC5)	Objectives and activities mostly unchanged from 2009-2014 plan, given that most were not achieved by 2015
2018	Signature of a co-management agreement for STP Parks	BirdLife International signed a MoU with Government of STP for co-management of STP Parks (PNOST and PNP)
	Launch of ECOFAC6 project for STP Parks	Led by civil society for the 1st time, by a consortium of conservation and development NGOs led by BirdLife International
2019	Procurement of PNOST equipment and HR needs analysis in 2018-19 (ECOFAC6)	Acquisition of a car, motorbikes, field equipment, identification cards, etc. for PNOST Agents
	Rehabilitation of PNOST headquarters in Bom Sucesso Botanical Garden (ECOFAC6)	Rehabilitation of buildings and botanical collections; and support for the development of a Giant Obô Snail reproduction centre
2020	Rehabilitation of PNOST hiking trails (ECOFAC6)	Service provision by Monte Pico Eco guides association (alternative activity during COVID19 period)
	Signature of an Agreement for management of ecotourism in Protected Areas (facilitated by ECOFAC6)	MoU between Gov-STP and the Responsible & Sustainable Tourism Platform (PTRS) signed for management of Tourism in the PNOST, incl. management of Park income from ecotourism
	Creation of the Environment Police (UPAB) and control outposts for better protection of the	Support for the development of an Environmental Police Unit, and the construction of 3 outposts to control forests products transport in main roads to reduce illegal activities

Year	*PNOST Management Interventions*	*Description and Results*
	PNOST and surrounding forests from illegal logging	
2021	Elaboration of PNOST Finance plan (ECOFAC6)	Development of a Business Plan for the PNOST. *Expected in 2021.*
	Elaboration of Ecotourism Action Plan (ECOFAC6)	Development of a National Ecotourism Action Plan (PNAE). *Expected in 2021*.
	Training and recruitment of a team of Obô Guardians, in charge of PNOST monitoring and protection	20 candidates were selected for training, towards a final selection of 10 Obô Guardians, who will complement the PNOST staff for efficient monitoring and law enforcement

II.1.2. Park boundaries and previous management zones

The PNOST is divided in three distinct areas, protecting the central massif of São Tomé, composed of native and old secondary forests, the northern savannahs and mangrove, and the largest mangrove and turtle nesting beach in the South, covering a total of 25,274ha (Table 3). The PNOST central massif is one of the best-preserved parts of the island due to its rugged relief and humid climate, which makes it difficult to access and to cultivate by settlers. The northern and southern areas of the PNOST are way more encroached with human settlements and activities and at risk of rapid degradation.

In addition to the three main sections of the PNOST, the law provides for a transition zone around the PNOST named "buffer zone", which extends beyond the limits of the Park, "in a strip whose width may vary between 250m and 10km" (Law n°6/2006, Article 5 No. 2); in which only specific low-impact activities should be allowed. However, the buffer zone was never formally decreed, and its interpretation remained arbitrary, based on projects and expert opinions, not adequately conveyed to stakeholders. The Northern and Southern sections of the PNOST (i.e., Northern Savana and Malanza mangrove) are commonly interpreted as not having buffer zones.

Table 3: Description of PNOST and buffer zone areas (from Albuquerque et al. 2015)

Name	*Type*	*Description*	*IUCN Cat.*	*Size (ha)*	*Year Established*
São Tomé Obô Natural Park (PNOST)	Forest	Central massif, mountainous area in the southern-western centre of ST	II	25,274 ha	2006 (Law 6/2006)
	Savannah Littoral	Protected Landscape Area of Praia das Conchas / Lagoa Azul in northern ST	V		
	Mangrove	Malanza Mangrove Natural Reserve, in southern ST	IV		
Buffer Zone	Secondary and shade forests	Transition Zone were natural resource use and activities should be regulated	-	19,858 ha	Proposed in 2006

The three (3) sections of the core PNOST area were divided into Management Zones, corresponding to "Integral Protection Zones" (in green, Figure 5) where only scientific activities, management monitoring and controlled excursions are permitted, and "Controlled Exploration Zones" or "Partial Protection Zones" (in orange/yellow, Figure 2) where some tourism activities, forest resource use and light constructions are also permitted (Table 4).

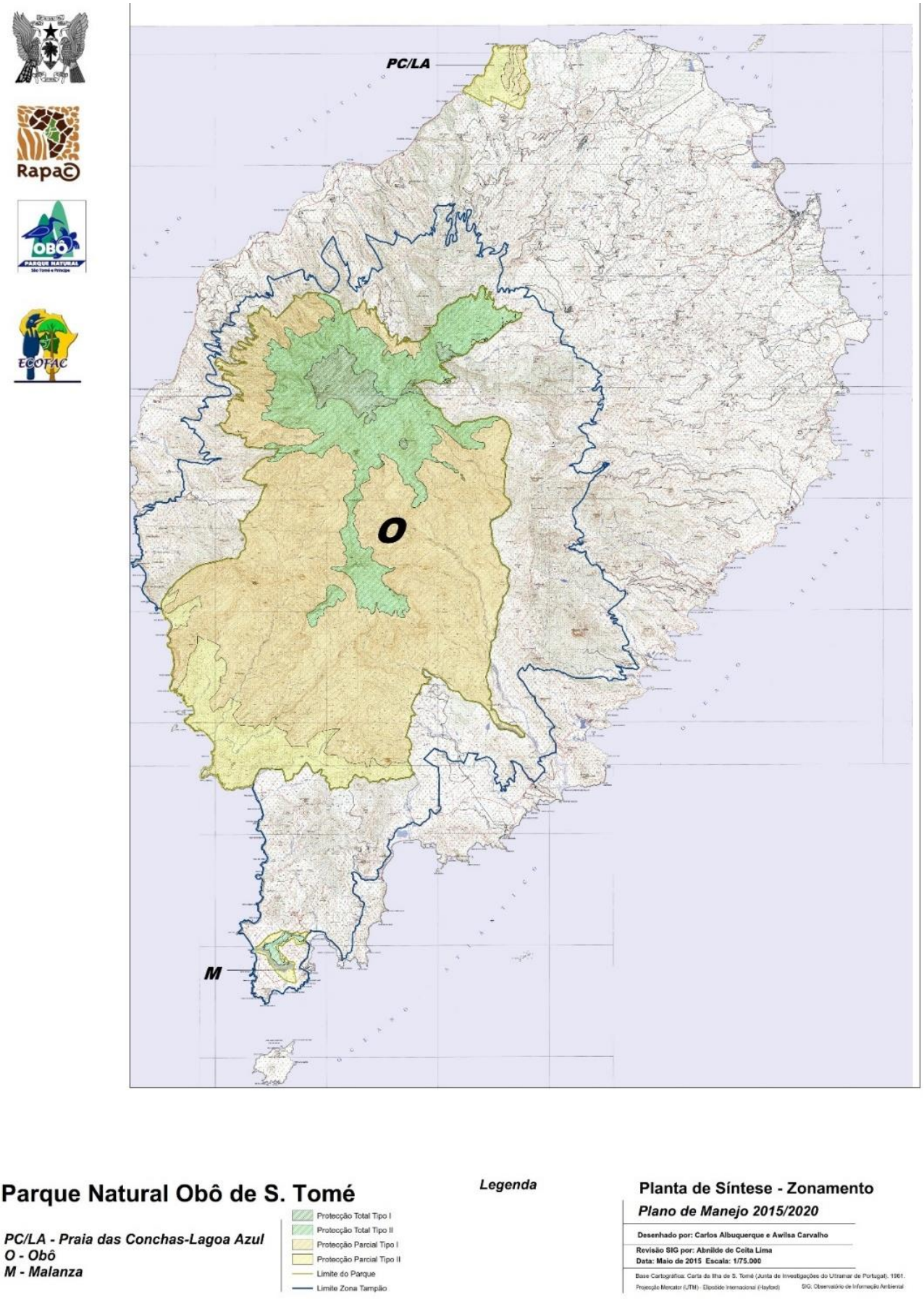

Figure 2. Map of the PNOST and Buffer Zone, with 2015 zoning (Albuquerque el al. 2015)

The management zones were modified between 2009 and 2015 Management Plans, with different areas and allowed activities, according to their value in terms of biodiversity as well as their current use of natural resources by local communities. However, the 2015 zoning is contested by some stakeholders because the justification of zones boundaries is not clear. An updated version of the PNOST Zoning, including the definition of a more realistic and functional "buffer zone", based on scientific evidence and community consultations, is discussed in Part III.4 of this Plan.

Table 4. 2015 Management Zones of the PNOST and associated regulations (Albuquerque et al. 2015)

Integral Preservation Zones	Permitted Activities
Integral Protection Type I	- Scientific research and dissemination - Ecosystem monitoring
Integral Protection Type II	- Intensive biological and ecological studies - Controlled excursions (limited group size & timetables, with certified park guides) - Construction of small, removable, visitation support structures
Controlled Exploration Zones	Permitted Activities
Partial Protection Type I	- Controlled use of medicinal species - Environmental Awareness/Education (guided tours accredited or authorized by PNOST) - Construction of small visitation support structures
Partial Protection Type II	- Construction of small infrastructure to support visitation or other allowed activities - Tourism as a factor of recovery and valorisation of the Heritage (ancient roças, etc.) - Extensive agricultural, forestry & livestock activities, approved by PNOST Management Board - Traditional local activities

II.1.2. Park governance

Until 2018, the PNOST was managed through its own directorate in São Tomé, under the Ministry of Agriculture, Fisheries and Rural Development (MAPDR). Following the parliamentary elections of 2018, the government has undergone a major reshaping and the PNOST directorate, particularly fragile (insufficient staff, no budget of its own), has been integrated into the Forest & Biodiversity Directorate (DFB) (Figure 3), which has a recognized role in the management of forests and terrestrial protected areas (Forest Law n°5/2001).

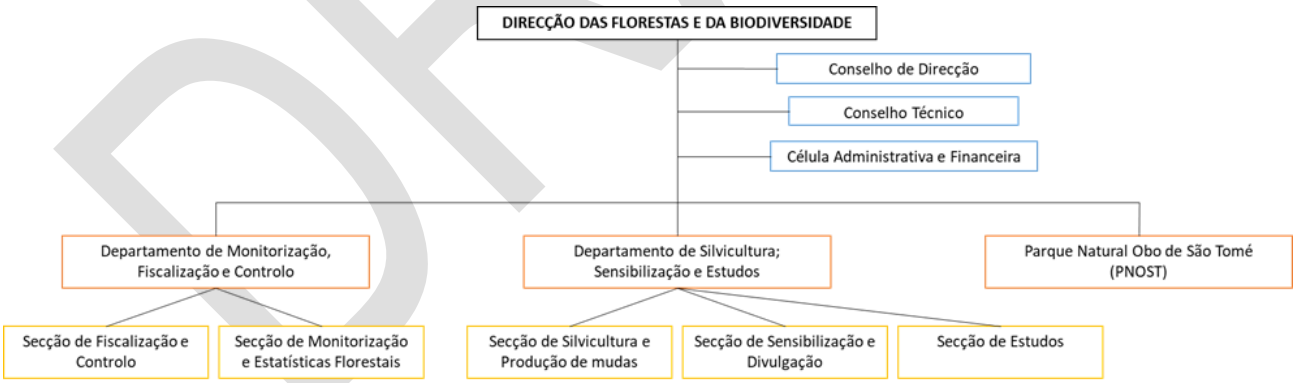

Figure 3. PNOST Department inside the Forest & Biodiversity Directorate (DFB)

PNOST regulations and management interventions also overlap with the attributions of the General Directorate for Environment (DGA), in particular the Department for Nature Conservation and Biodiversity Management. Clearer mandates between the DFB and the DGA would improve the application and enforcement of the environmental laws and policies.

Until 2020, the PNOST had only 8 staff members: 1 head of section, 1 administrative officer, 1 driver, 4 eco-guides and 1 cleaning agent; and insufficient resources and capacity, and no incentive mechanisms, compared to the size of the protected area they aim to preserve. Therefore, their presence is sparse on the ground and

staff motivation to work is low. However, the signature of a MoU between STP Government and the Sustainable and Responsible Tourism Platform (PTRS) in August 2020, supported by the EU/ECOFAC6 project, marked the first important partnership to improve management of the PNOST, in particular through ecotourism, with the development of a National Action Plan for Ecotourism in Protected Areas (PNAE), but also through the recruitment in March 2021 of a team of 12 "Obô Guardians", to improve the monitoring and surveillance of the PNOST.

In 2020, the National Police created an Environmental Police Unit (UPAB), as a response to increased illegal activities, in particular logging, for a better control of forest resource extraction in the island. High level of coordination between the PNOST, line Directorates and the UPAB will thus be required to ensure efficient communication and monitoring effort, to reduce illegal activities in and around the PNOST.

To date, the PNOST does not have a management council, thus management decisions are mostly taken internally, and do not integrate neighbouring communities' and forest users' representatives. There are no systems in place to facilitate coordination between PNOST staff and other key stakeholders including the private sector.

II.2. Physical environment

While no major changes in physical environment have been observed in the Park between this Plan and the previous iterations, all physical maps have recently been updated by the National Land Use Plan, in 2020, and a summary is presented below (reports and complementary maps are available in the PNOT 2020).

II.2.1. Climate

São Tomé has a humid tropical climate with two seasons, the rainy season (October to May) is the hottest and rainiest season, when sea temperature can reach around 28ºC, and the 'Gravana' season (June to September), the coldest and driest season, when sea temperature drops a little, around 24ºC.

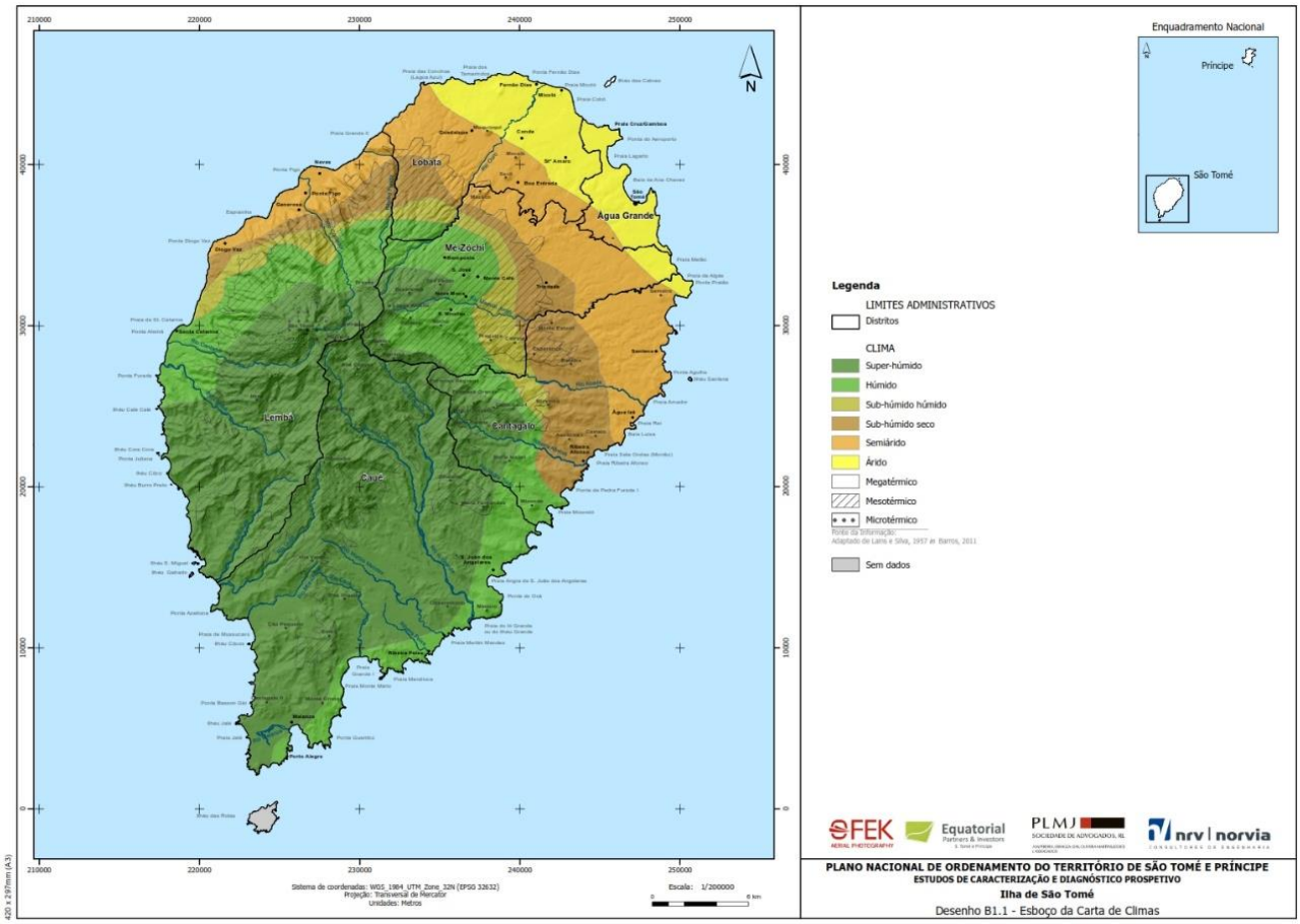

Figure 4. Map of São Tomé climates (PNOT 2020)

In addition, there is a multiplicity of microclimates throughout the island, defined mainly by rainfall, temperature (varying according to altitude) and location (Figure 7). The average annual temperature is 26ºC, with average annual rainfall between 2,000 and 3,000mm. In the mist forests of the centre of the island, in the PNOST central massif, precipitations can reach up to 7,000mm per year, while in the northern savannah section of the PNOST, it is below 1,000mm.

II.2.2. Geology

In the Gulf of Guinea, São Tomé is located on the oceanic section of the Cameroon volcanic alignment, which extends for 1600 km from the interior of the African continent to the island of Pagalu. São Tomé has a volcanic origin, and its geology is characterized by volcanic rocks of four main stratigraphic units:

- The volcanic formation of 'Ilhéu das Cabras' is the oldest (13 mya - millions years ago);
- The Mizambú volcanic complex (6 to 8 mya);
- The Ribeira Afonso volcanic complex (5 to 2.5 mya), including volcanoes in the SE of the island, and potential coastal/submarine facies;
- The São Tomé volcanic complex (<1.5 mya) forms the northern half and southern end of the island. Sequences of submarine seawater appear on the N and NW coasts.

The relief of the island is rugged in the NW and SW areas, up to the coast and the PNOST central massif encompasses ones of the most rugged areas of the island. In the NE and SE, the reliefs are smoother and with large settlements slightly inclined towards the coastline, in the contours between 300-400 meters of altitude (Figure 5).

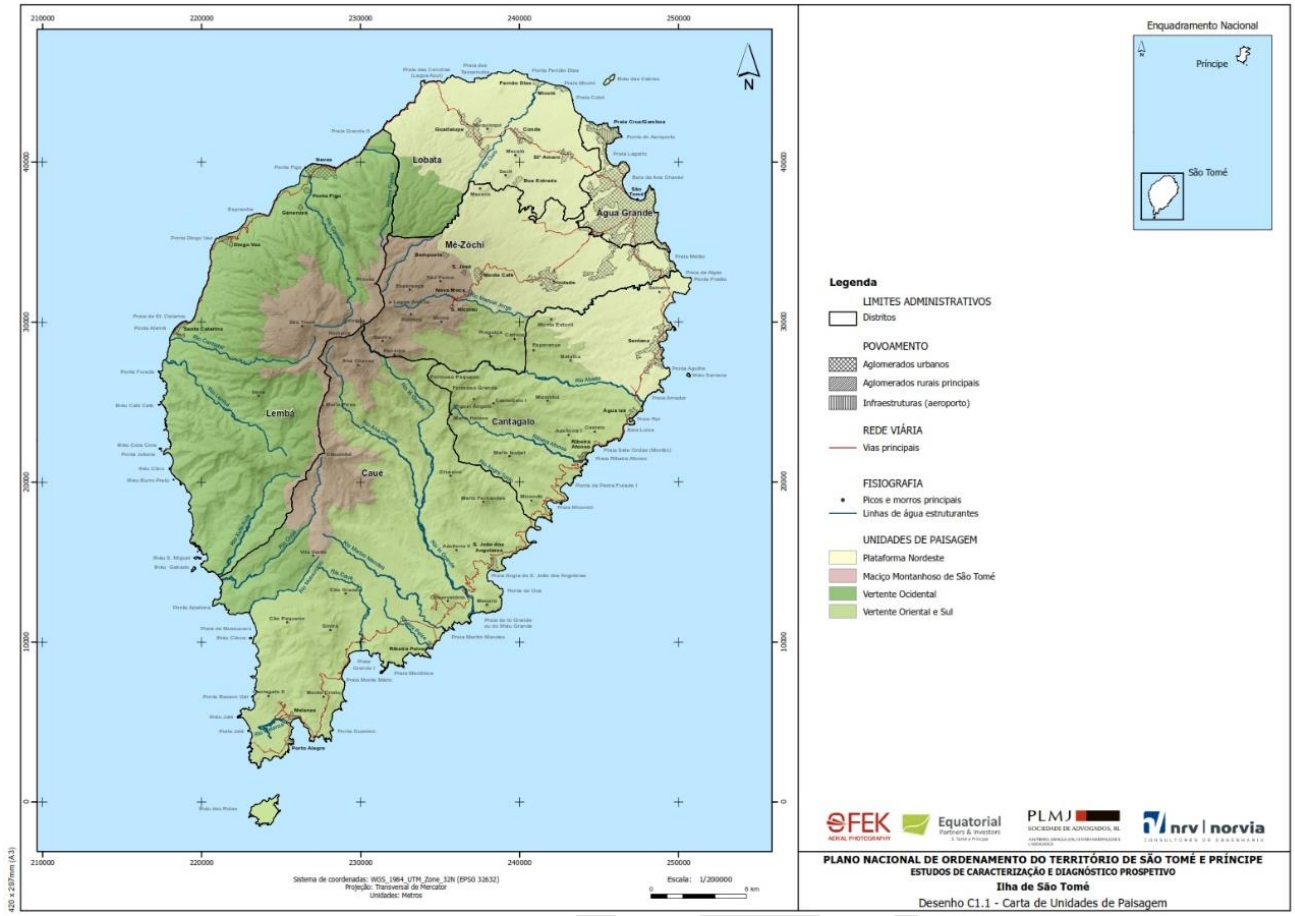

Figure 5. Map of São Tomé Landscape Units (PNOT 2020)

II.2.3. Soil types and occupation

The country's soils are considerably fertile, based on volcanic soils of clay type, ideal for cultivation (Figure 6).

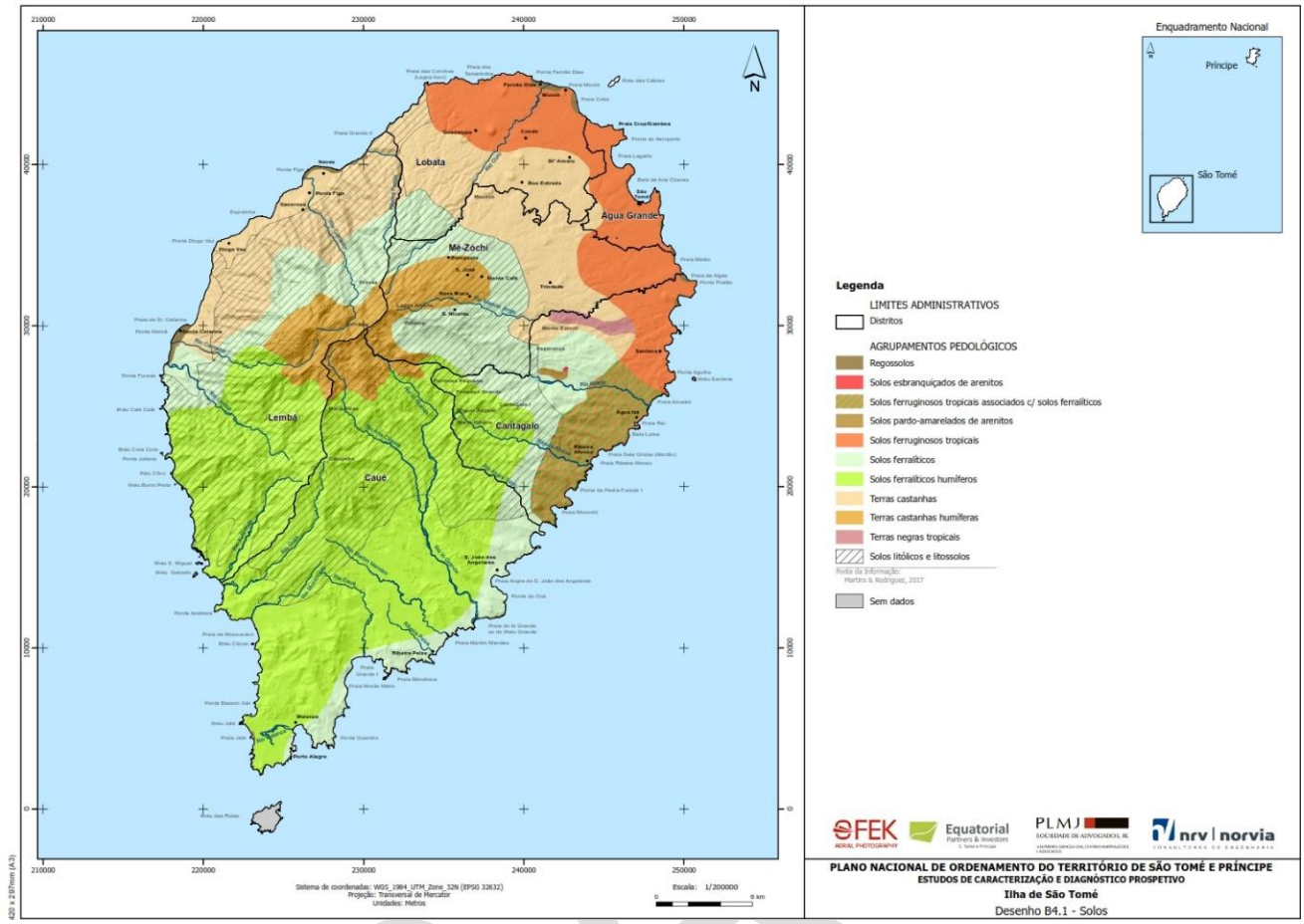

Figure 6. Map of São Tomé Soil Types (PNOT 2020)

The main agricultural systems in STP are forests, agroforestry system and annual crop system. Cash crops like sugar cane, coffee and cocoa have dominated STP agriculture and currently, cocoa remains the main crop of the country, and to a lower level, coconut, flowers, pepper and other spices. Locally, the traditional productions for basic diet includes banana, rice, tubers, beans, cassava, vegetables and breadfruit. In the agroforestry system, the most frequent associations are: coconut, eventually in association with cocoa; cocoa, eventually in association with banana and matabala; coffee, eventually in association with banana and matabala and palm in association with cocoa.

Food production is normally limited to the non-protected forests, as well as the Buffer Zone, but with several encroachment areas along the Park's boundaries (Bom Sucesso area, Northern Savanna and Malanza area), and remains insufficient to meet internal market demand and nutritional security.

II.2.4. Hydrology

The water potential of the island is high, due to its humid climate and rugged relief. The amount of water available per inhabitant is high, although not properly used. The hydrographic network is in star shape, and the nine (9) largest rivers are born in the interior of the PNOST central massif, around the highest reliefs, and running down towards the deep valleys and the sea (Figure 7). Most rivers have a voluminous flow fed by rain almost all year round. They are used for consumption, irrigation, washing clothes and hygiene in general.

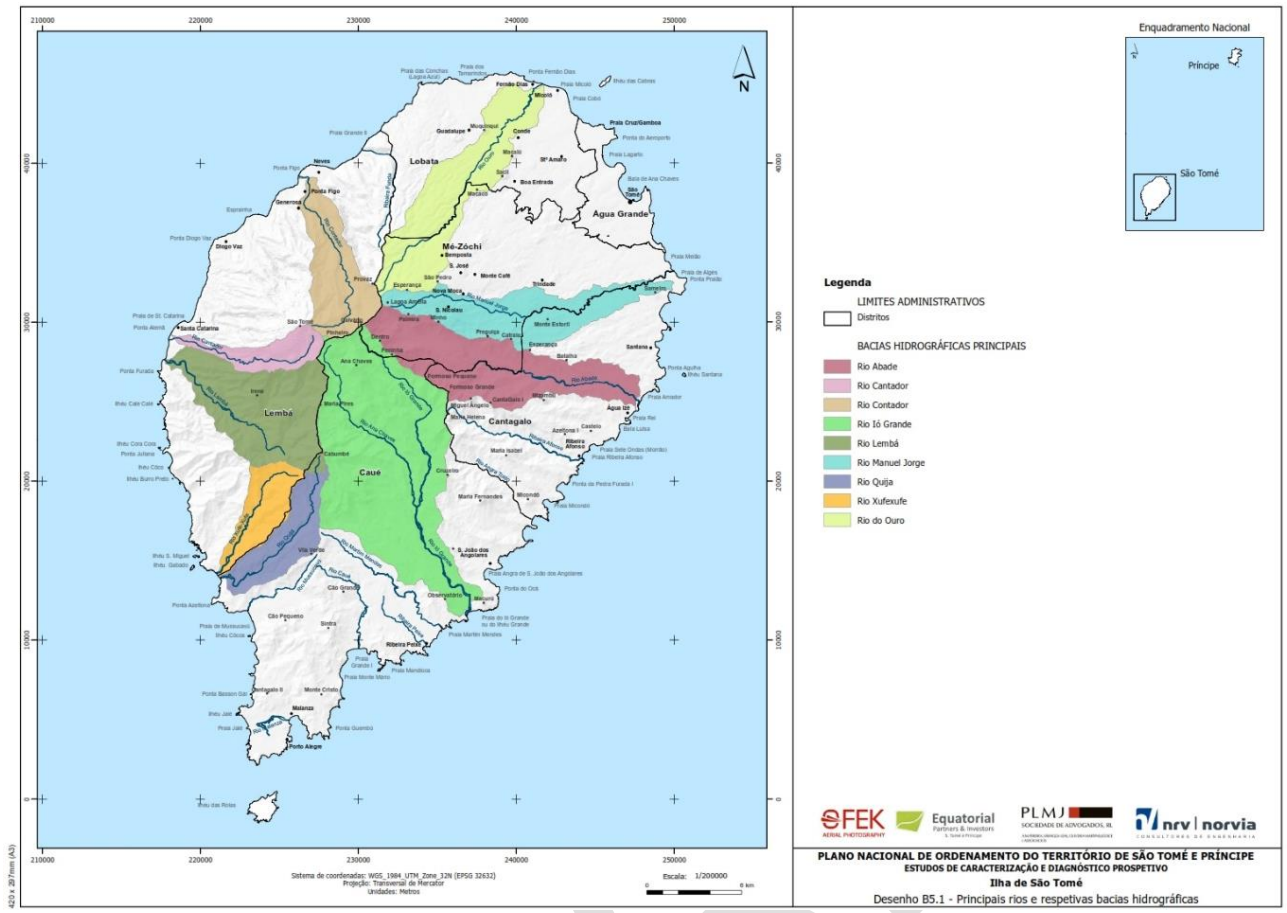

Figure 7. Map of São Tomé Hydrographic Network (PNOT 2020)

II.3 Biodiversity

II.3.1 Habitats

The first habitat classification was based on flora surveys from the colonial period. According to Jones et al. (1991) the most complete list of vegetation types in STP was given by Exell (1944), who carried out detailed flora sampling on both islands in 1932-33. Apart from some very small areas of mangroves and sand dunes on the coast, Exell considered that the original vegetation of São Tomé was made up of rainforests that evenly covered the island, almost to the top of Pico of São Tomé. Exell identified the different habitats or plant communities of the island according to elevation:

- Lowland forest (c. 770 km^2), from 0 to 800 m altitude: equivalent to Africa's nearby continental forests. In São Tomé, the characteristic species of this formation are: *Rinorea chevalieri*, *Zanthoxylum thomense*, *Drypetes glabra*, *Anisophyllea cabole* and *Sorindeia grandifolia*.
- Montane forest (c. 76 km^2), from 800 to 1400 m altitude: presents a slow transition of species, with greater variety than in lower altitude formations, but with a similar general appearance. The trees are tall (30 to 40 m) with dense canopy and the high humidity favours a wide floral diversity, e.g. orchids, mosses, tree ferns, epiphytes and vines, which cover the trunk of the large trees. The characteristic tree species of these formations are: *Trichilia grandifolia*, *Pauridiantha insularis*, *Pavetta monticola*, *Erythrococca molleri*, and *Tabernaemontana stenosiphon*.
- Mist forest (8km^2), from 1400 to 2024 m altitude, are limited to ridges and mountain tops, characterised by high rainfall and humidity, with constant fog and low temperatures, with smaller trees, dominated by *Schefflera*, rarely exceeding 10m in height, and less dense canopies. The epiphytes, in particular orchids and ferns, are abundant in these formations. The characteristic trees are: *Afrocarpus mannii*, *Balthasaria mannii*, *Psychotria guerkeana* and *P. nubicola*.

- Coastal formations, including riparian forests and mangrove areas. The mangrove areas are generally very small (c. 2km^2) and essentially composed of *Rhizophora racemosa*, *R. harrisonii* and *Avicennia germinans*, along the northern and eastern coast, the most important of which are Malanza located on the southern coast of São Tomé.

These natural vegetation types are now subject to varying levels of anthropogenic interference. Most lowland forests were converted to agricultural use, especially in the drier north-east and along the coast, and numerous exotic species were introduced (Monod, 1960), and forests are now classified into four complementary categories reflecting this change (Jones et al. 1991; Salgueiro & Carvalho 2000):

- The native forests are estimated to cover around 226 km^2 of the island, most of which in the mountainous centre and south-west of the island, inside the PNOST central Massif boundaries, making up most of the PNOST area (Figure 11, Soares 2017). They have no history of plantation or heavy logging, mainly due to their harsh climate and location in areas of extremely hilly relief, which make them difficult or impossible to access and transform. Introduced species might be present (e.g. *Bambusa vulgaris*, *Cinchona* sp., *Cecropia peltata*), but they are dominated by natives and have a high proportion of endemic plant species as well as most endemic fauna (Diniz et al. 2002; de Lima 2012).
- The secondary forests (capoeira) are the second main type of forests inside the PNOST central massif, norther Savana and Malanza Mangrove. They are mostly bordering the main block of native forest. They result from agricultural abandonment or logging activity, holding an impoverished assemblage of forest species, often dominated by introduced species or trees of low commercial timber value (e.g. *Artocarpus altilis*, *Pycnanthus angolensis*). The first areas of coffee and cocoa to be abandoned correspond to those located on steep slopes, usually on the edge of the primary forest. The secondary forests host many endemic species, and act as a buffer, protecting the native forest from human influence.
- The shade plantations mostly occupy the northeast and coastal areas. There are sporadic shade plantations close to the boundaries of the PNOST Central Massif and along the northern savanna section of the Park. Typically, they consist of active or resting agroforestry areas in which export crops, such as cocoa or coffee, are intercropped with banana and taro, under the shade of large fast-growing tree species (e.g. *Erythrina* sp., *Artocarpus altilis*). These plantations in the mid-nineteenth century covered about 70% of São Tomé;
- The Savannah and other non-forest areas occupy the remaining of the island. They are not present in the PNOST central massif, but include the driest north-east region of São Tomé (Praia das Conchas and Lagoa Azul areas) and thus represent a large portion of the Northern Savanna section of the PNOST. This area is covered by a mosaic of herbaceous savannah species interrupted by small tree and shrub formations that, due to the absence of a continuous tree cover, contrast strongly with the rest of the country. It is believed that these formations resulted from the intense deforestation and frequent fires that have been practised since the beginning of human colonisation of the island, particularly for sugarcane cultivation. *Adansonia digitata* stands out for its silhouette, and the presence of *Ziziphus mauritiana*, *Capparis tomentosa*, *Parkia biglobosa* and *Borassus aethiopium* in this area should also be mentioned. Non-forested areas also include urban areas, and a wide variety of active or resting agricultural areas, in which the main crop does not grow under the cover of trees, such as those of sugar cane *Saccharum officinarum*, coconut *Cocos nucifera,* oil palm *Elaeis guineensis,* and smallholder horticulture.

The coverage of each forest type was assessed and quantified in 2017, and a GIS layer of São Tomé forest cover was prepared based on this assessment by a MSc student from Lisbon University, based on 2014 aerial photos and additional sources of information (Table 5 and Figure 11; Soares 2017).

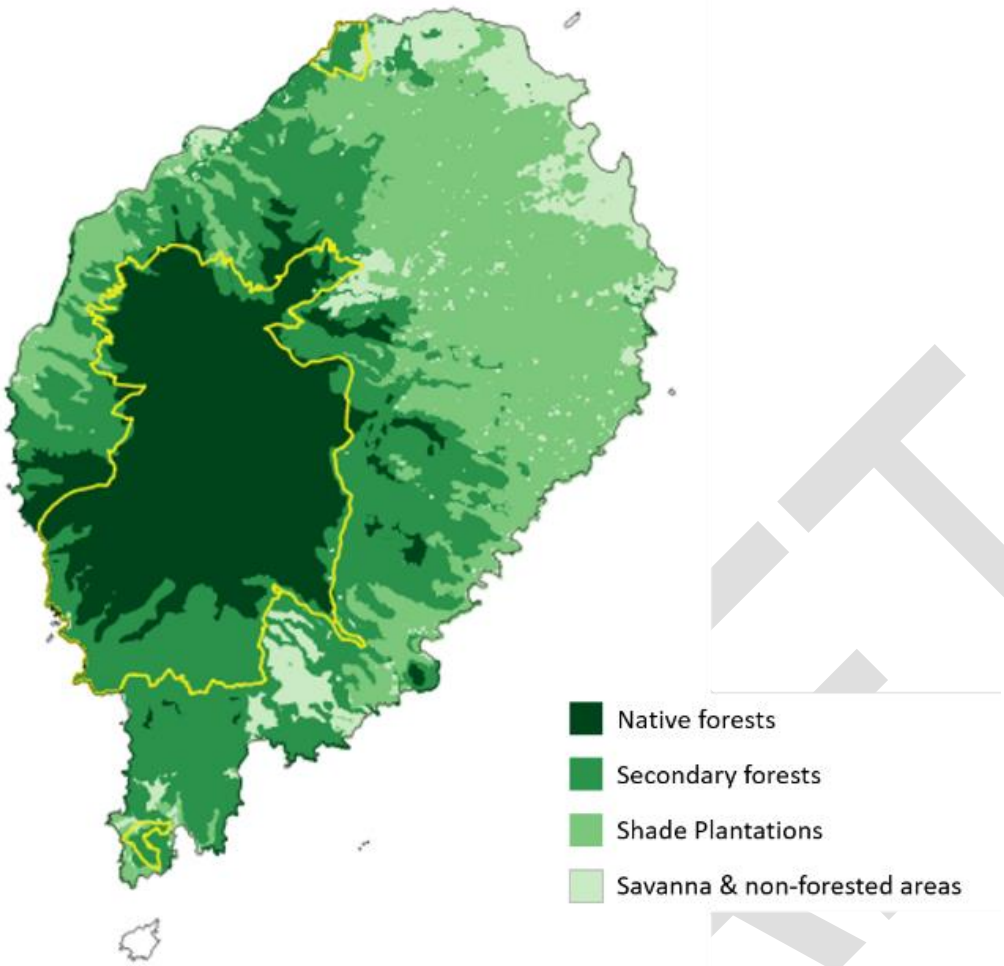

Figure 8: Sao Tomé island land cover with forest types in 2014 (Soares 2017), PNOST boundaries are indicated in yellow.

Table 5: Forest area in São Tomé in 2014 (Soares 2017)

#	Name	São Tomé Island			PNOST		
		Area (ha)	Distribution (%)		Area (ha)	Distribution (%)	
1	Native Forest	22,607.80	26.4%	85.5%	~19,500.0 ha		
2	Secondary Forest	26,120.30	30.5%		~6,700.0 ha		
3	Shade Plantation	24,418.25	28.5%		~0.4 ha		
4	Non-Forest	12,423.30	14.5%	14.5%	~75.0 ha		
TOTAL		85,569.65	100.0%	100.0%			

II.3.2. Flora

Based on the previous PNOST Management Plans, the estimated number of floristic species existing in the archipelago would be of about 1,200, of which around 900 are indigenous, including 148 endemic species in STP (14% of the national flora) of which 123 are present in São Tomé island (RDSTP, 2014); and about 300 introduced species (sub-spontaneous or cultivated) (NBSAP 2015-2020). It was subsequently corroborated by a review of STP flora data that identified 931 plant species and suggested that about 200 additional species were expected to be found but not yet identified (Dauby et al. 2016, Sosef et al. 2017).

The national flora also includes more than 100 pteridophytes (ferns and similar) and about 800 species of spermatophytes. According to the previous Park Management Plans, the most representative families of the terrestrial angiosperms group in STP are Rubiaceae (27 species), Orchidaceae (35 endemic species out of 135

species, i.e. 23% endemism), Euphorbiaceae (11 endemic species), Melastomataceae (8 endemic species out of 17 endemic species, i.e. 47% endemism), and Begoniaceae (6 endemic species out of 11, i.e. 55% endemism).

However, only 90 species have a conservation status available on the IUCN Red List, half of these assessments are obsolete (more than 10 years old) and very few concern endemic species of the archipelago (IUCN, 2019).

Since 2016, a Global Tree Campaign project led by Fundação Príncipe, Fauna & Flora International, Coimbra University and the Missouri Botanical Garden, was launched to describe the tree diversity on Príncipe Island (GTC Phase 2 report, 2018), using a transect sampling method to describe tree taxonomy, distribution and ecology; in order to assess the conservation status of rare and unknown tree species. In 2019 a CEPF funded project aimed at extending the Flora study to São Tomé Island, to identify threatened plant species of São Tomé, and rigorously evaluate their conservation status according to the criteria of the IUCN Red List, with focus in the PNOST area and its surrounding forests. First results are expected during the Red Listing in March 2021.

II.3.4. Fauna

São Tomé is not particularly rich in terms of species diversity, but it has a very high level of endemism (Jones 1994; Stattersfield et al. 1998) and is sometimes called the “Galapagos of Africa” for this reason. The rate of endemism in STP is high in most taxonomic groups (Jones 1994): 20 species and 8 subspecies out of the 50 resident terrestrial bird species (Jones & Tye 2006); all 5 amphibian species, and 10 out of 12 terrestrial reptiles (Ceríaco et al. 2018); 5 out of the 11 native mammals (Rainho et al. 2010). Other groups are less studied but likely to hold high proportions of endemic species, like invertebrates (Jones 1994) or terrestrial molluscs, which are currently estimated to include 31 endemics out of the 46 native species (Holyoak et al. 2020) (see Annex 5 for a list of threatened and endemic species (and subspecies) occurring in São Tomé Island).

Birds are by far the most studied taxa in STP, and São Tomé is an Endemic Bird Area (EBA-082 "São Tomé Island"), classified as "Critical", the top level of global priority (Stattersfield & al., 1998; BirdLife International, 2019). The breeding avifauna of STP encompasses forest, savannah, water, shore and marine birds. Among STP resident birds, 13 species (15%) are globally threatened in STP (4 CR, 5 EN, 4 VU; and 4 NT), including, in São Tomé Island, 3 critically endangered species (CR): the Dwarf Olive Ibis *Bostrychia bocagei*, São Tomé Grosbeak *Crithagra concolor*, Newton's [São Tomé] Fiscal *Lanius newtoni*, 4 endangered species (EN): São Tomé Olive-pigeon *Columba thomensis*, São Tomé Green-pigeon *Treron sanctithomae*, Grey Parrot *Psittacus erithacus*, and 4 vulnerable species (VU): São Tomé Short-tail *Amaurocichla bocagii*, São Tomé Scops-owl *Otus hartlaubi*, São Tomé Oriole *Oriolus crassirostris*, and the world's largest sunbird, Giant Sunbird *Dreptes thomensis* (http://datazone.birdlife.org/country/sao-tome).
Most threatened bird species are associated with the native and old secondary forest block in São Tomé central massif (Jones 1994, de Lima et al. 2012, Soares 2017), including the 3 critically endangered birds, which are mainly restricted to the native forests protected by the PNOST (de Lima et al. 2017). Specific action plans were developed by BirdLife in 2014 for the 3 CR endemics of São Tomé, for the period 2014-2018, but their implementation was limited and an update of this action plan is being planned for 2021/22. Bird surveys from 2015 and 2016 also recorded 29 species in the mangroves of São Tomé, including the VU and endemic São Tomé Green Pigeon (Haroun et al., 2018); as well as one record of the endemic bat *Chaerephon tomensis*, in the savannah ecosystem of São Tomé (Hilton-Taylor 2000). It is probable, however, that most or all of the savannah species were originally introduced by man at least a century ago, as cage or game birds (Jones & Tye 2006).

Among mammals, there is only 2 endemic species (including the São Tomé collared fruit bat, *Myonycteris brachycephala*, EN [status to be reassessed probably to CR as only 2 sightings were registered]) and 1 endemic subspecies of bats, and 1 endemic shrew (*Crocidura thomensis*, EN) in São Tomé. The other mammals were introduced, including domestic animals (dogs, cats), pest-control animals (African civets *Civettictis civetta*,

European weasels *Mustela nivalis*) and livestock (pigs, goats, chickens, etc.) (Dutton 1994). São Tomé also hosts introduced Mona monkey (*Cercopithecus mona*) probably introduced as pets or food (Dutton 1994).

Other vertebrates of STP include 21 reptiles (17 endemic) and 8 endemic amphibians (Ceríaco et al. 2018). 5 snake species are present in São Tomé Island, all of them endemic, but only 1 has its conservation status assessed, the St. Thomas Beaked Snake *Letheobia feae* (LC); the others are the Cobra-preta *Naja peroescobari*, São Tomé Wood Snake/Cobra Suá-Suá *Philothamnus thomensis*, Newton's Beaked Snake *Letheobia newtoni* and Brown House Snake/Cobra Jita *Boaedon bedriagae*. The Cobra-Preta ("black snake" in Portuguese), was only recently listed as endemic by Ceríaco et al. (2017) study of the biogeographic history of the Gulf of Guinea oceanic islands, and the recent insights on taxonomy and evolutionary ecology, which suggested that this species represents a distinct lineage of the *melanoleuca* group, endemic to São Tomé.

Among terrestrial molluscs, there are 31 endemics, 6 of which shared with Príncipe (Holyoak et al. 2020), including the Obô giant land snail (*Archachatina bicarinata*). At least 6 land snail species were introduced to the island, including the giant West African snail (*Archachatina marginata*), which represents a potential threat for its endemic counterpart.

The knowledge of invertebrates is still limited, and most known species still are not assessed (IUCN 2019), but several studies were launched or planned in recent years (e.g. Microland association inventoried invertebrate species in and around the PNOST in 2019) and more are needed to better verify their presence, understand their assemblages and distribution, as well as their role in ecosystems and conservation status.

São Tomé and Príncipe are also surrounded by large seabird colonies and by deep, rich seas, with a variety of cetaceans using their waters, and 5 species of sea turtles (1 CR, 1 EN and 3 VU), including 4 that nest regularly on its beaches from June to January each year, including in the south of PNOST, in particular in Praia Jalé (Programa Tatô, 2019). Nesting species are the hawksbill turtle/sada *Eretmochelys imbricata* (CR), which mostly uses the southern beaches of the PNOST and buffer zone to nest, hunted for its shell (handicrafts); the green turtle/mão branca *Chelonia mydas* (EN), which nests in most beaches of São Tomé, and is hunted for its meat and eggs; the olive ridley turtle/tatô *Lepidochelys olivacea* (VU) which is the most common species in STP, hunted for its meat and eggs, and suffered a strongest decline compared to other species, as it is smaller and therefore more easily transported by poachers (Albuquerque & Cesarini, 2009); the leatherback turtle/ambulância *Dermochelys coriacea* (VU), less frequent on STP beaches, most often seen in the south of the island. Finally, the loggerhead turtle *Caretta caretta*, can be sighted at sea but there are very few nesting records in STP.

II.4 Socio-economic context around the Park borders

Most of the rural population is divided in nucleus or communities in the secondary forests and shade plantations surrounding the PNOST (see Figure 9). They are mostly engaged in agriculture, in a context of subsistence economy in which self-consumption predominates and only production surplus is sent to markets for sale. Transformation of raw resources are limited and rudimentary (PNOT 2018). Food production is insufficient to meet domestic demand, therefore most food must be imported to the country. Increasing production across the different agricultural sub-sectors to enhance food security and income levels is a key priority at the national level.

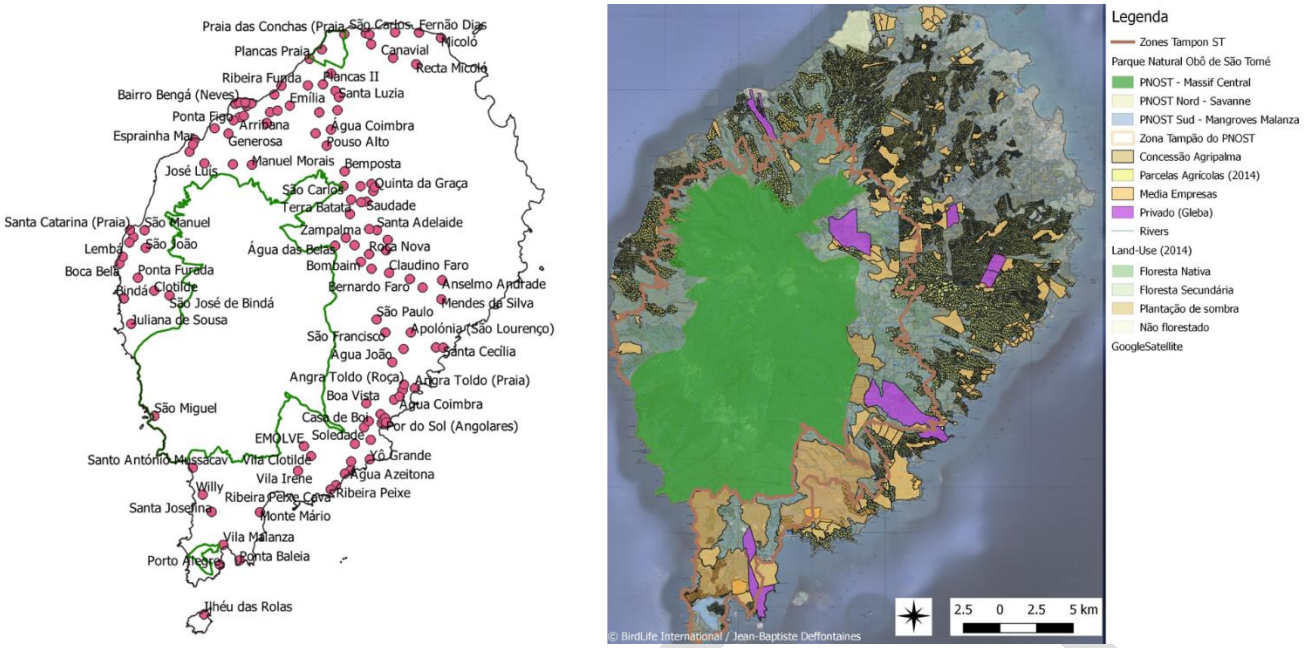

Figure 9. Communities bordering the PNOST, mostly inside the buffer zone (left, RDSTP) and current land-use map of São Tomé (right, BirdLife International 2019).

The proximity to native and secondary forest protected by the PNOST and buffer zone, added to the level of poverty of the surrounding communities, often lead them to subsist on the extraction of its main products, i.e. wood for house or boats constructions as well as for charcoal production for domestic fuel (kitchen), or non-wood products that they can gather inside the forest, mainly for food and traditional medicine.

According to data from the 2012 General Census of the Human Population (INE 2012), at national level 80.1% of houses are made of wood. This sector represents the largest consumption of sawn timber in the country, and is growing, in parallel to demographic growth, due to its use as the main construction material and as the main source of domestic fuel. This evolution reinforces the need to control 'illegal' logging, in the pursuit of objectives and targets to be achieved by 2030 (de Carvalho & al. 2018).

Non-wood forest products (NWFP) include palm wine, giant land snails (both west african and obô snails), largely consumed as one of the typical culinary foods (the endemic and threatened Obô Giant Land Snail has a Species Action Plan (Panisi et al. 2020), which identified reducing its consumption by local people as a priority for its conservation); wild honey (often collected by burning the host tree); African fan palm (*Borassus aethiopicum*) for construction and handicrafts; food plants including the African oil bean (*Pentaclethra macrophylla*), the African Cardamom (*Aframomum danielli*), Kola nuts (*Cola acuminata*), Ashanti pepper (*Piper guineense*) and African breadfruit (*Treculia africana*); as well as medicinal plants. They are often collected by women (except palm wine and honey). Most of these extractive activities are informal and unregulated and participates to the increasing pressure on forest, due to not adapted extraction techniques, putting at risk ecological, social and economic sustainability (Carvalho, 2013).

The rapid development and population growth of São Tomé and Príncipe, also increases challenges to maintain forest integrity and the fragile balance between biodiversity conservation and development; due to large agricultural or tourism development, for example 4 917 ha were concessioned to the company Agripalma (Socfin), which, between 2009 and 2013, cleared the forest for planting African oil palm (*Elaeis guineensis*), in the southern part of São Tomé Island, up to the PNOST border. In addition, the absence of registration and records of land ownership and the absence of adequate land legislation, authorities and enforcement which followed the agricultural land reform, facilitated the unregulated clearing of land for small-scale agriculture; the increase in population has thus led to the unregulated growth of horticultural activities in the centre of

São Tomé Island, sometimes inside the PNOST borders. In the Savanna area of the PNOST, unregulated fires used for slash and burn agriculture are degrading the landscape and biodiversity, and wood is often overharvested for charcoal production.

II.5 Current threats analysis

The current threats to the integrity of the PNOST and buffer zone ecosystems and biodiversity were listed in Table 6 (and illustrated on Figure 10), and their perceived level of impact was evaluated using a participative approach and traffic light colours, the most pressing threat (with larger and more durable impact) in red, medium threat level in yellow and the least concerning ones (smaller and reversible impact) in green. During the ONP-WG workshop, each participant voted for the threat level/colour associated with each threat; the colour with most votes was discussed in between the parties to agree on the final threat level.

Since the park designation, management capacity has been limited, with a lack of staff and a lack of continuity in monitoring and surveillance. In addition, rural communities surrounding the PNOST continue living in very basic conditions today, attending to day-to-day need mainly using neighbouring forests natural resources for food or housing, including in the PNOST. Therefore, given that the island population is constantly growing at a high rate while poverty remains high, there is an increased level of pressure on the PNOST natural resources and its surrounding forests that needs addressing.

Figure 10. Illustration of PNOST threats, from up left to down right: development of macro-projects, charcoal, climate change (see level rise), agricultural expansion, sand extraction, palm wine extraction, pollution (plastic waste), illegal logging, collection of fauna (snails), invasive species.

Table 6: Participative analysis of current threats to the PNOST and its buffer zone

	Threat level	*Threat*	*Sub-Threats*	*Comments*
Land use change and habitat loss		Development of macro-projects in the PNOST and the buffer zone	Construction of tourism infrastructure (hotels, tourist complexes, access roads, etc.)	Mostly affecting the coastline
			Electric power production (hydroelectric dams)	To mention that currently the opening of power lines to distribute the energy is not subject to Environmental Impact Assessment (EIA) in National Laws and is recognised as one of the main factors of deforestation within the last few years
			Development of agroindustry (large and medium scale)	e.g. palm oil production, cocoa intensive plantations, etc.
		Unsustainable farming practices in PNOST and its Buffer Zone	Small-scale / family farming and animal husbandry (soil and habitat degradation)	Vegetable production in the Bom Sucesso area is expanding with significant encroachment to the PNOST. Forest clear cut technics are used to open fields leading to high erosion and associated soil degradation (short production cycles) additional to irregulated use of pesticide. The PNOST acting as 'water tower', this affects directly the northern watershed deserving the main cities of Trindade and São Tomé (ecosystem services)
		Degradation of Praia das Conchas and Malanza mangroves and coastal areas	Purposeful burning of savannah for agriculture	slash-and burn practices
			Extraction of sand and building stones	Sand mining is negatively impacting beach habitats and therefore major threat to sea turtle reproduction
Unsustainable use of forest resources		Use and exploitation of natural resources - PFNL - in PNOST and Buffer Zone	Extraction of palm wine	Clearing around palm trees and facilitated regeneration of palm trees by local wine makers is leading to degradation of some areas, even in the core of the PNOST (Zampalma, Monte Carmo, western coastal areas)
			Uncontrolled hunting of endemic and/or threatened species	see São Tomé CR birds Species Action Plan (BirdLife International, 2014)
			Collection of Medicinal Plants for traditional medicine	Collection methods often impeding plant regeneration
			Harvesting of Obô snail for food consumption	see Obô Snail Action Plan (Panisi & Sinclair, 2020)
			Burning of beehives for honey collection	Often cutting the tree to access the beehives and burn it to not suffer stings from the bees
			Tourism malpractices	e.g. collection of walking sticks & medicinal plant samples

		Unsustainable and illegal exploitation of Timber Forest Products in PNOST and Buffer Zone	Indiscriminate/disorderly felling of trees for local market; mainly for construction (houses, boats)	Selective logging to source timber for construction purposes, primarily houses given that 80% of houses are made of wood. Logging largely relies on access by roads reachable from the forest via trails, however, also affects the SW-quarter of ST (where there is no coastal road) where timber is brought to the coast to be transported by boat
			Charcoal production	around 57.6% of the population uses firewood and/or charcoal resource as energy source; See Charcoal STP value chain analysis (Nuno et al., in prep)
Invasive and feral species		Introduction and increased distribution of invasive (exotic) species of flora	Potential competition for and degradation of habitat, replacement of endemic species and potential spread of diseases	The expansion of invasive plants causes increasingly dense vegetation in the forest understory reducing for instance the suitability of forest habitat for the critically endangered Dwarf Ibis and São Tomé Fiscal Fiscal; See preliminary list of invasive plants (Missouri Botanical Garden, 2010): *Bambusa vulgaris, Rubus rosifolius, Lantana camara, Iresine herbstii, Tithonia diversifolia, etc.*
		Introduction and spread of invasive (exotic) species of fauna	Unregulated introduced and feral fauna causing potential competition for food & habitat, predation, and spread of zoonoses to endemic species	Rats, civets, feral cats have colonized native forest or certainly the edges of it and are very likely to have had a deleterious effect upon birds and other vertebrate species; mona monkey can spread invasive plants through seed dispersal; etc.
Pollution		Pollution	Pesticide use in agriculture - causing contamination of soil, air, water	In particular in the Bom Sucesso area – see comments associated with 'small scale family farming'
			Lack of sanitation in communities and waste disposed in the open	a threat especially for the country's rivers and streams
Climate Change		Climate Change	Changes in climatic variables (T°, PP): Temperature increase (air and sea), changes in precipitation regime (seasonality, frequency, quantity), etc.	Causing modification or disappearance of ecological niche and critical habitats for native and endemic species of fauna and flora; plus, increased risks of flooding, landslides, soil erosion, drought (in the savanna area), loss of coastal habitats (sea level rise), etc. Reforestation with local species able to adapt to changing climate conditions are encouraged (STP Agenda 2030)
			Sea level rise and ocean acidification	
			Proliferation of pests and diseases with risk for endemic species	

PART III - STRATEGIC PLANNING FOR THE ITERATION 2020-2025

III.1 Analysis of the previous Management Plan iteration

III.1.1 Results and challenges

The PNOST has wide international recognition of its global relevance for biodiversity conservation (le Saout et al. 2013) and protects most of the remaining native forests of São Tomé. However, conservation efforts on the ground remained weak until 2018 (BirdLife International 2019). The constantly growing population and thus demand for forest resources, coupled with a weak legal and regulatory framework for conservation are major obstacles to enforcing the law and improving the management of the park. The two previous 5-year management plans (2009 and 2015) did not meet their ambitious objectives, which were not adapted to the capacity of the PNOST management team at the time. The lack of a stable source of funding and insufficient human and material means dedicated to the PNOST management has also limited the management efficiency of the PNOST. In addition, because the buffer zone boundaries mentioned in the law n°6/2006 were not recognized legally, the buffer zone never really worked as a transition zone on the ground and does not have management plans but is more of a complex puzzle of management mechanisms mixed with no-management at all (BirdLife International 2019).

While the PNOST 2015-2020 Management Plan (Albuquerque et al. 2015) attempted to address most of the threats faced by the PNOST at the time, the absence of a comprehensive Monitoring & Evaluation system of the Plan did not allow for a quantitative diagnosis of its successes and failures. However, the ONP-WG members concurred in saying that most of the medium-term objectives of the previous plan were not achieved, except for the 'valuation of popular knowledge on biodiversity and traditional practices', the 'study of medicinal plants' and the 'identification of activities with potential donors' objectives, which were only partially met. Although the PNOST Department itself recognizes most of the problems within its authority, the lack of means (vehicles, equipment) and human resources (only 6 technicians acting as the Botanical Garden eco-guides) are the underlying issues they mentioned as the main constraints for effective implementation of the previous plan. This situation is not restricted to the PNOST and the Forest & Biodiversity Directorate (DFB), hosting the PNOST Department, also has limited capacity and resources to achieve its mission and is facing intrinsic challenges; thus law enforcement activities are not systematic and violent incidents in March 2018 with local communities have also contributed to drastically reduced the forest surveillance effort.

However, from 2018, key projects such as EU/ECOFAC6, CEPF small-grants (conservation of Obô Giant Snail, Threatened flora, etc.) and other smaller initiatives linked to the PNOST, allowed to start or continue some of the 2015-2020 activities of the Management Plan. Thus, some activities of the previous plan (2015) and still pending or ongoing. Through the EU/ECOFAC6 project, the rehabilitation of the Bom Sucesso Botanical Garden and the hiking trails started in 2019, and in 2020 was launched a communication campaign about STP biodiversity and the PNOST role in its conservation. A series of expert consultations were also launched in 2020, in particular the Gov-STP mobilized support through the CEEAC to assess the possibility to set up an institute or agency in the country for PA management and improve institutional framework for PNOST management by clarifying the role of each institution thus reducing overlap between the DGA and the DFB mandates. Another expert consultation was launched to develop the PNOST business plan, and a partnership was acted with the civil society to manage ecotourism in the PNOST and develop a National Action Plan for Ecotourism. In addition, the recent creation of a specialized unit within the National Police for biodiversity protection and the environment (November 2019) and the recruitment of a monitoring and surveillance team of Obô Guardians (February 2021), have raised hopes to leverage capacity for improved law enforcement in the coming years (key management interventions are summarized in Table 2, Part II.1 of this Plan).

These recent progresses are however a work in progress and will thus continue to be key objectives and activities for the PNOST management plan 2020-2025. In addition, despite recent improvements in terms of structural management interventions, significant challenges remain today and will be addressed in this Plan:

i. The PNOST zoning and regulations have never been enacted and promulgated, and the resources and capacities of the authorities for the implementation of the Management Plan are still low.
ii. Deforestation for agricultural purposes (e.g. around Bom Sucesso, and along 'caminho do fugido' trail), for timber extraction and charcoal production still lacks monitoring and may have increased. In the savanna area slash and burn practices are degrading the ecosystem (incl. the last dry forest patches around Praia das Conchas and Lagoa Azul).
iii. Indiscriminate and illegal felling of trees in almost all parts of the island lacks monitoring and seem to have increased (in particular in Erminda, Ribeira Peixe, Caué district, Formosa Duas Grotas, Claudino Faro, Cantagalo district) due to low or inexistent law enforcement.
iv. The collection and hunting of threatened species (fauna & flora) continue at a high rate in the PNOST and its buffer zone, where limited sustainable forest resource use practices are in place.
v. The recent coronavirus pandemic (2020) may have increased pressure on forest resources for subsistence purposes (indiscriminately in or around the PNOST), in particular for sensitive populations who were hit by the associated economic crisis. An increase of unsustainable collection of medicinal plants was observed in São Tomé during this period.

Other concerns raised during the participatory analysis of the 2015 management plan, were the lack of revision and implementation of the hunting, environmental, forestry and fisheries laws; the low level of monitoring and surveillance in the PNOST; the low level of inter-institutional coordination; the lack of operationalization of the National Forest Monitoring System (SNMF) and the lack of state engagement for biodiversity.

III.1.2 Stakeholder's recommendations for this iteration

General

- The plan shall be in line with others National Plans and Strategies; in particular the recently approved National Spatial and Land-Use Plan (PNOT 2020).
- The Plan shall be implemented under the strategic guidance of a well-established Management Council for the PNOST.
- The Plan and further regulations stemming from it shall be endorsed legally, by the Gov-STP; and technically, by the stakeholders.
- During the review process it is crucial to involve social and community groups in the PNOST surroundings (charcoal makers, loggers, hunters, NTFP gatherers/collectors). They are the first users of the PNOST resources and therefore main stakeholders for implementation of the Plan.
- Key stakeholders such as Export Cooperatives and agriculture related public and private institutions shall be involved in the planning. The localities and municipalities shall not be underestimated.
- Emphasis should be placed on the urgency to ensure the protection of biological diversity in a context of global warming and pandemic risks. The new reality of a COVID19 world shall be considered.
- The Plan shall focus on the PNOST core areas (central massif, northern savannah of Praia das Conchas/Lagoa Azul and Malanza mangal) and identify steps forward to sustainable and responsible management of a redefined buffer zone. Other guiding document for site-specific management planning in the buffer zone shall be developed within the implementation period of the plan.

Law enforcement

- Concrete action & mechanisms to improve PNOST surveillance effort shall be planned; building on current successes such as the Obô Guardians cohort, the Environmental Police unit, recently built or planned infrastructures (i.e. network of outposts for permanent control of the main access routes). This includes setting up coordination mechanisms and monitoring systems, Park staff and partners training, technical support (law specialists, consultancies on strategic planning, etc.), financial support (operational costs – including fuel, food rations, insurances, incentives) as well as maintenance support (infrastructures, uniforms, etc.).
- To complete the surveillance effort, the plan shall promote systematic judicial follow-up of environmental crime cases and assess and monitor judicial effectiveness.

- The pillars of enforcement being the strength of the legal framework, several laws & regulations shall be reviewed accordingly, such as the Forestry and Hunting Laws.

Capacitation

- The effort to coordinate, build teams and capacitate the PNOST staff and partners (relevant institutions and organisations playing a role in biodiversity and PA management) shall be maintained and expanded.
- Building on growing awareness and civil society capacities, this shall be coupled with advanced advocacy, using the power of many.

Buffer zone and sustainable activities

- In the Management Plan, alternative activities should be proposed, especially in rural communities, to reduce the needs/demand of timber and wood for charcoal production.
- The PNOST being a central piece of the landscape island wide; the management plan shall convene stakeholders in its periphery to ensure biodiversity conservation beyond the PNOST boundary. Indeed, sustainable management of the resources in the Parks' surrounding shall reduce the pressure to the resources inside it, and limit encroachments. This means that resources shall be allocated to mainstreaming biodiversity into sectorial activities; into the agricultural sector (agroforest and conservation agriculture practices, improving production of high value products and identifying niche markets to enhance respective products' value based on environmental and social criteria), into the forestry sector (reforestation / forest restoration along riverbanks, multi-use of lands, plantation), into the water/energy sector (make renewable energy clean and biodiversity-friendly).

Communication and information/experience sharing

- The development of an integrated communication and awareness raising campaign for the public should be included; potentially capitalizing on current civil society effort (e.g., Obô-Ôvyô campaign).
- Exchanges of experience/institutional exchanges shall be promoted with the PNP/island of Príncipe; but also with others Parks facing similar challenging within their respective landscapes in the region.

III.2 Mission and Vision

Mission. 'Conserving the Natural Habitats and the Biological Diversity of São Tomé island'

Vision. "The ecosystems and associated biodiversity of the PNOST and surrounding landscape are effectively protected through sustainable, innovative and resilient management and finance mechanisms, in an enabling environment for informed and empowered communities, actively participating in the decision-making processes and opting for responsible and sustainable use of natural resources; thus, making the PNOST an example at national, regional and international level."

III.3 Strategic objectives

To identify and analyse PNOST current intern strengths and weaknesses, as well as external opportunities and threats, a SWOT (Strengths, Weaknesses, Opportunities and Threats, Annex 8) and a TOWS analysis (Annex 9) were performed participatively in September-October 2020, allowing to identify the main strategic objectives for the PNOST over the 2020-2025 period. The PNOST Theory of Change summarizes the thinking process towards the action plan, from the conservation target to the management strategies designed to address the underlying causes of pressing threats on PNOST biodiversity (scope & target) (Figure 11).

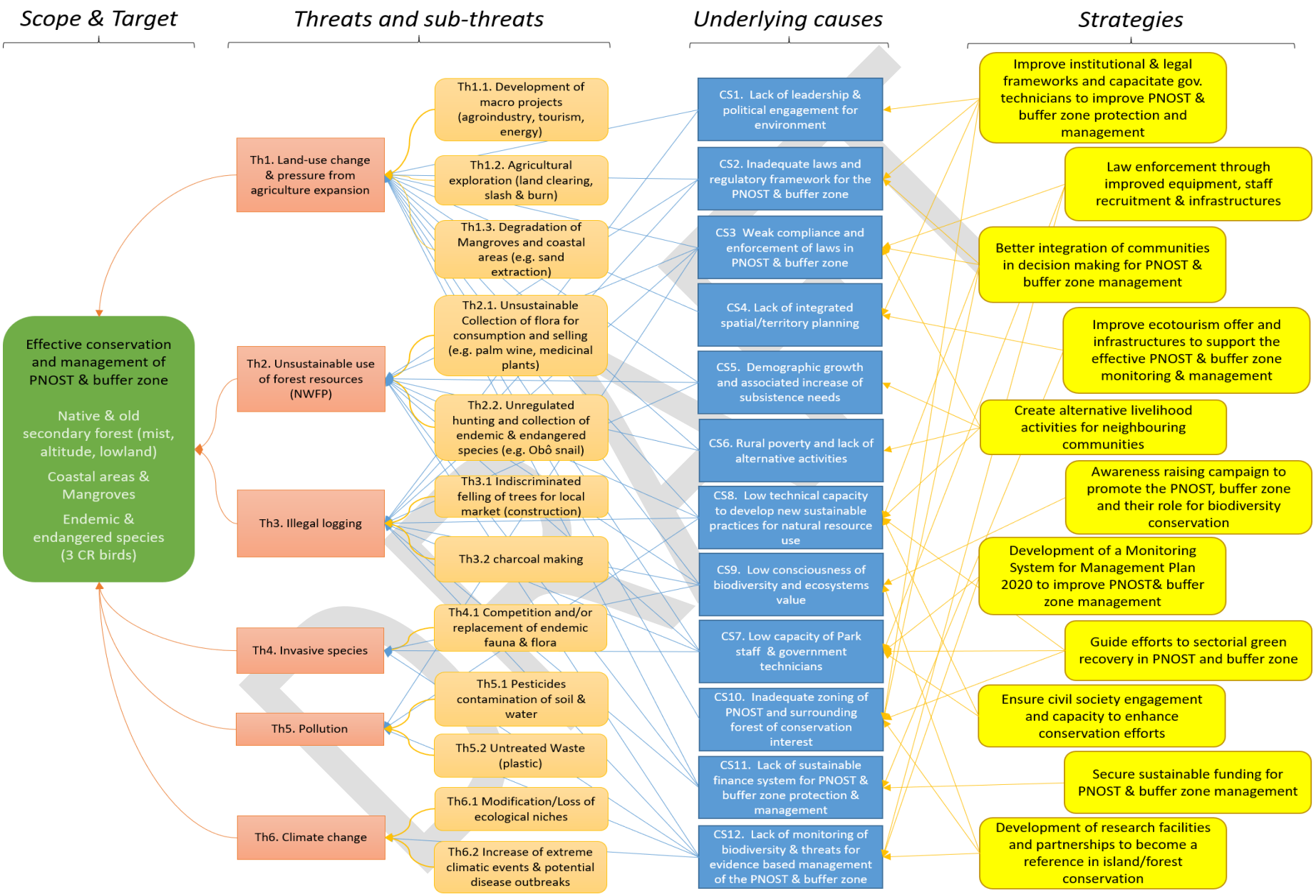

Figure 11: PNOST Theory of change (ToC) resulting from participatory baseline analysis

After grouping management strategies by relevant themes, six (6) Strategic Objectives were identified for this Management Plan, to reach the PNOST vision by 2025, with their associated high-level activities:

Governance - Legal Framework - Inclusivity

(SO1) Improve institutional & legal framework, through capacity building and participatory mechanisms, to increase PNOST management and protection efficiency

SO1.O1. Review PNOST institutional arrangement and its integration into national PA network

SO1.O2. Ensure integration of PNOST management requirements and recommendations in laws and policies

SO1.O3. Enhance PNOST staff role in mainstreaming biodiversity in sectorial activities through capacity building

SO1.O4. Ensure local communities' integration and engagement in PNOST decision-making processes

SO1.O5. Set-up an inclusive PNOST Management Council to facilitate participatory decision-making

Surveillance – Human Resources - Infrastructures

(SO2) Increase surveillance mechanisms and infrastructures to effectively enforce the law and decrease threats in the PNOST

SO2.O1. Develop a surveillance outposts network to control PNOST strategic locations and access roads

SO2.O2. Improve the PNOST surveillance team number, efficiency, and motivation

SO2.O3. Develop and implement a Law Enforcement Strategy for the PNOST and surrounding forests

SO2.O4. Capacitate PNOST staff and relevant government technicians and police in law enforcement

SO2.O5. Improve field equipment and ensure its maintenance (e.g., uniforms, vehicles, etc.)

Monitoring - Research - Biodiversity and threats

(SO3) Improve knowledge and monitoring of biodiversity and threats status in the PNOST by developing research facilities and partnerships to become a reference in island/forest conservation.

SO3.O1. Develop a coherent research action plan, identifying priorities for the PNOST

SO3.O2. Improve knowledge on PNOST biodiversity & threats and facilitate research packages related to pressing management questions

SO3.O3. Develop partnerships with academia for evidence-based management of the PNOST

SO3.O4. Support the revision/development of Species Action Plans, Key Biodiversity Areas, and the updates of IUCN red lists of species and ecosystems

SO3.O5. Develop a Management Oriented Monitoring System for the PNOST

Livelihood – Development

(SO4) Guide sustainable use of natural resources by neighbouring communities and promote sectorial green practices/recovery in the PNOST and surrounding forests, through developing alternatives to PNOST degradation

SO4.O1. Develop alternatives to the use of natural resources in the PNOST Buffer Zone, in particular to timber and coal

SO4.O2. Enable access to technology and tailored mechanisms for sustainable extraction and transformation of natural resources in the PNOST Buffer Zone

SO4.O3. Facilitate access to micro-grants for PNOST neighbouring communities & natural resources users, to develop green businesses

SO4.O4. Develop & implement innovative management models (e.g. community-based, PPPs, concessions, etc.) for the forests surrounding the PNOST

SO4.O5. Guide efforts for improving sectorial practices and green recovery in the PNOST buffer zone

Tourism - Sustainable finances

(SO5) Secure sustainable funding for the PNOST and surrounding forests management, in particular through improvement of the ecotourism offer and infrastructures as well as other innovative finance mechanisms.

SO5.O1. Develop ecotourism in the PNOST by actively participating in the development and implementation of the National Action Plan for Ecotourism in the PNOST and its buffer zone; and leverage fees from eco-tourism to ensure long-lasting maintenance of facilities

SO5.O2. Rehabilitate/repurpose PNOST entrances in reference ecotourism, research & interpretation centres

SO5.O3. Develop and implement PNOST Business plan to secure long-lasting funds for effective conservation of the PNOST and wider landscape

SO5.O4. Seek further funding opportunities for the PNOST and buffer zone through public aid and cooperation

Communication - Advocacy

(SO6) Develop awareness raising campaign to promote the PNOST, surrounding forests and their role for biodiversity conservation, targeting local to international public.

SO6.O1. Build-on the Obô-Ôvyô communication campaign to raise awareness on PNOST biodiversity, threats, opportunities and regulations, and promote sustainable resource use in the buffer zone, to secure long-lasting local, regional, and international visibility

SO6.O2. Develop specific communication material for the PNOST and buffer zone

SO6.O3. Participate in the strengthening and coordination of Civil Society and Community-Based Organisations network, to guide interventions in/around the PNOST and enhance advocacy efforts for PNOST protection

IIL4 Action Plan

In order to reach its target strategic objectives, each SO is derived in high-level activities and specific activities, in the below Action Plan (Table 7).

Table 7: PNOST Action Plan for the iteration 2020-2025

code	*High level Activity*	*Priority*	*code*	*Specific Activity*	*Period / Year*
SO1	Governance - Legal Framework - Inclusivity				
SO1.O1	Review PNOST institutional arrangement and its integration into national PA network	High	SO1.O1.A1	Assess the interest & feasibility of the integration of the PNOST unit in a National Institute/agency for Protected Areas	Expected in 2021
			SO1.O1.A2	Support the integration of the PNOST unit into the Institute/agency for Protected Areas (including rehabilitation/construction of associated infrastructures)	By 2025
SO1.O2	Ensure integration of PNOST management requirements & recommendations in environmental and human rights laws and policies	Medium	SO1.O2.A1	Review & provide recommendation for environmental (biodiversity, climate change) & Human rights (community rights, law enforcement) laws & policies improvement	2023
			SO1.O2.A2	Develop PNOST Management Plan, zoning, and associated regulations and advocate for their endorsement and decree by STP government	2021
			SO1.O2.A3	Ensure the integration of the PNOST and buffer zone management plans recommendations into the National Territory Plan (PNOT)	Next PNOT phase
SO1.O3	Enhance the role of PNOST staff in mainstreaming biodiversity and sustainable practices into sectorial activities through capacity building	Medium	SO1.O3.A1	Develop a training plan in policy, advocacy, biodiversity and sustainable development themes, for PNOST staff and line directorate technicians	2021
			SO1.O3.A2	Implement a training plan in policy, advocacy, biodiversity and sustainable development themes, for PNOST and line directorate technicians	Continuous
			SO1.O3.A3	Organize a workshop for STP Government and sectoral directorates to promote biodiversity safeguards in policies and development planning	By 2025
SO1.O4	Ensure local communities' integration and engagement in PNOST management decisions	High	SO1.O4.A1	Consult neighbouring communities and forest users to collect sensitivities & expectations about PNOST & buffer zone limits, regulations & management (initial, mid-term & end-term consultation)	2021, 2023, 2025
			SO1.O4.A2	Ensure participation of communities' representatives in PNOST management council	2021
SO1.O5	Set-up a PNOST Management Council allowing for information exchange and facilitating participatory decision-making	High	SO1.O5.A1	Create PNOST management council - coordination mechanism involving communities, government, NGOs/CSOs, private sector & research institutions	2021
			SO1.O5.A2	Set-up and ensure regular meetings of the PNOST Management council to monitor and update the PNOST Management Plan	Continuous
SO2	Surveillance – Human resources – Infrastructures				
SO2.O1	Develop a surveillance outposts network to control PNOST strategic locations and access roads	Medium	SO2.O1.A1	Set-up new PNOST beacons at appropriate and visible locations to delimitate PNOST and buffer zone boundaries	By 2025
			SO2.O1.A2	Construct and/or rehabilitate PNOST surveillance outposts	2023
			SO2.O1.A3	Support the construction of surveillance outposts in main access roads	2021
SO2.O2	Improve the PNOST surveillance team number, efficiency, and motivation	High	SO2.O2.A1	Recruit a team of "Obo Guardians" to perform PNOST management interventions and patrols against illegal activities	2021

			SO2.O2.A2	Develop & implement adequate operational incentives schemes for PNOST staff and Obô Guardians to guaranty staff motivation & engagement	2021
			SO2.O2.A3	Support the development of the Environmental Police Unit (UPAB)	2021
			SO2.O2.A4	Set-up a community surveillance system in the buffer zone	By 2025
SO2.O3	Develop & implement a Law Enforcement Strategy for the PNOST and surrounding forests	High	SO2.O3.A1	Patrol the PNOST daily at strategic locations (Obo Guardians)	2021
			SO2.O3.A2	Develop a Law Enforcement strategy for the PNOST & surrounding forests	2022
			SO2.O3.A3	Implement the Law Enforcement strategy for the PNOST & surrounding forests	From 2022
			SO2.O3.A4	Ensure integration of PNOST recommendations & knowledge of current threats in the National Environmental Law Enforcement Strategy and Action Plan	2022
			SO2.O3.A5	Ensure coordination and information sharing between PNOST staff, civil society (Obô guardians), line directorates (DFB), Police (UPAB) and communities	From 2022
SO2.O4	Capacitate PNOST staff and relevant government technicians and police in law enforcement	Medium	SO2.O4.A1	Provide training to PNOST staff, Obô Guardians, line directorates (DFB) and police (UPAB) on PNOST biodiversity, threats, law enforcement & human rights	2021
			SO2.O4.A2	Perform bi-annual biodiversity & threats surveys along land use gradient following approved protocols	Bi-annually
SO2.O5	Improve field equipment and ensure its maintenance (e.g., uniforms, vehicles, etc.)	Medium	SO2.O5.A1	Purchase protection and monitoring equipment for PNOST staff and activities	As needed
			SO2.O5.A2	Maintain an inventory of equipment, incl. maintenance needs & interventions	2021
SO3	Research – Monitoring - Biodiversity and threats				
SO3.O1	Develop a coherent Research Action Plan, identifying priorities for the PNOST	Medium	SO3.O1.A1	Set-up a priority list of research themes or questions to inform management interventions (list publicly available for consultation)	2021
			SO3.O1.A2	Revise the research permit application system with the Nagoya focal point	2023
			SO3.O1.A3	Develop an online collaborative database of research projects and data collected to inform PNOST management (e.g. GBIF Portugal)	By 2025
			SO3.O1.A4	Develop sustainable finance mechanisms to support research activities and maintenance of PNOST research facilities (e.g. volunteering programs)	By 2025
SO3.O2	Improve knowledge on PNOST biodiversity & threats and facilitate research packages related to pressing PNOST management questions	High	SO3.O2.A1	Develop a list of invasive species (fauna & flora) & an Action Plan to reduce their expansion and negative impact on native biodiversity in the PNOST	2023
			SO3.O2.A2	Assess the importance (i.e. economic valuation) of the ecosystem services provided by the PNOST, for livelihood of local communities & national economy	2021
			SO3.O2.A3	Review/update PNOST zoning by integrating new data on HCV forests and associated regulations	2021
			SO3.O2.A4	Study climate change impact on PNOST biodiversity and how to reach resilience	By 2025
			SO3.O2.A5	Study lesser-known taxa (e.g. insects) and their role in the ecosystem	By 2025

SO3.O3	Develop partnerships with academia (national and international) for evidence-based management of the PNOST	Medium	SO3.O3.A1	Build synergy with Universities and NGOs to support capacity building training plan of PNOST staff (courses, seminars, etc.)	2022
			SO3.O3.A2	Build synergy with STP University to analyse PNOST biodiversity & threats annual monitoring data collected by PNOST staff	2022
			SO3.O3.A3	Develop partnerships with universities and NGOs to develop training program for local students, incl. PNOST visits and internships on priority themes	2022
SO3.O4	Support the revision/development of Species Action Plans and Key Biodiversity Areas, and the updates of IUCN red lists of species and ecosystems, for global recognition of the PNOST and buffer zone as biodiversity hotspots	Medium	SO3.O4.A1	Update flora inventory, taxonomy, and IUCN red list of endemic plant species	2022
			SO3.O4.A2	Update IUCN red list of fauna, in particular avifauna	Next IUCN assessment
			SO3.O4.A3	Develop an IUCN red list of ecosystems (https://iucnrle.org/)	2023
			SO3.O4.A4	Support the update & implementation of endangered Species Action Plan	Next SAP phase
			SO3.O4.A5	Review collaboratively the Key Biodiversity Area network and associated management mechanisms	2022
SO3.O5	Develop a Management Oriented Monitoring System (MOMS) for the PNOST	Medium	SO3.O4.A1	Assess PNOST METT value each year	Annually
			SO3.O4.A2	Set up a MOMS to improve assessment & update of conservation efforts	By 2025
SO4	Livelihood - Development				
SO4.O1	Develop alternatives to the use of natural resources in the PNOST Buffer Zone, in particular to timber and coal	High	SO4.O1.A1	Study forest stocks, dynamics and threats to promote alternative activities	2022
			SO4.O1.A2	Study value chains of forest resource use (timber, charcoal, palm wine, medicinal plants, etc.) and identify potential alternatives	available in 2021
SO4.O2	Enable access to technology and tailored mechanisms for sustainable extraction and transformation of natural resources in the PNOST Buffer Zone	Medium	SO4.O2.A1	Promote sustainable and improved use of, or alternatives to, forest products	2022
			SO4.O2.A2	Capacitate & support implementation of improved and more sustainable value chains and/or alternatives to forest products	2023
			SO4.O2.A3	Reforest degraded forests and shade plantation with fast growing native tree species to satisfy demand for specific resources (e.g. charcoal)	2024
SO4.O3	Facilitating access to micro-grants for PNOST neighbouring communities and natural resources users, to develop green businesses	Medium	SO4.O3.A1	Support the development of green businesses in the communities surrounding the PNOST by providing continuous technical support	By 2025
			SO4.O3.A2	Capitalize on green businesses development 'lessons learned' to identify participatively cost-effective measures of economic support for communities	By 2025
SO4.O4	Develop innovative & biodiversity-friendly management models (e.g. community-based, PPP, concession, etc.) for the forests surrounding the PNOST	Medium	SO4.O4.A1	Support the development of innovative site-specific management/partnership models to balance livelihood and nature protection	From 2022
			SO4.O4.A2	Support the development of compressed earth-blocks productions as an alternative construction material (to reduce use of sand, timber)	By 2025
			SO4.O4.A3	Support the development of a butterfly farm for tourists and collectors	2022

			SO4.O4.A4	Support the development of a nationally adapted timber certification mechanism (FSC model) able to self-sustain restauration mechanisms	By 2025
SO4.O5	Guide efforts for improving sectorial practices in the PNOST buffer zone by promoting agroforestry and conservation agriculture	Low	SO4.O5.A1	Support the National campaign on biodiversity and sustainable resource use	Continuous
			SO4.O5.A2	Monitor sectorial practices in the PNOST buffer zone and capitalize on lessons learned to guide practices	Continuous
			SO4.O5.A3	Support the Forest Restauration initiative around the Contador hydroelectric development area	By 2025
SO5	Tourism - Sustainable finances				
SO5.O1	Develop ecotourism in the PNOST by actively participating in the development and implementation of the National Action Plan for Ecotourism in the PNOST and its buffer zone; and leverage fees from eco-tourism to ensure long-lasting maintenance of facilities	Medium	SO5.O1.A1	Support the development of the National Action Plan for Ecotourism - PNAE elaborated by the Plataforma de Turismo Responsavel e Sustentavel – PTRS (*Park entrance fee system; new/rehabilitated infrastructures; management models for infrastructures; maintenance of trails & infrastructures; ecoguides certification scheme; thematic expeditions (e.g. birdwatching); information boards for key tourism spots; ecotourism comunication campaign; etc.)*	available in 2021
			SO5.O1.A2	Support the Implementation of the PNAE	From 2022
			SO5.O1.A3	Operationalize the Park Special Fund and ensure its transparent management (perform audit at mid-term and end-term)	From 2022
SO5.O2	Rehabilitate and repurpose PNOST entrances (north and south) into reference ecotourism, research & interpretation centres	Medium	SO5.O2.A1	Fundraise for the rehabilitation of Monte Carmo old roça into a Research & Interpretation Centre based on the developed pre-study	2022
			SO5.O2.A2	Rehabilitate Monte Carmo roça into a Research & Interpretation Centre	By 2025
			SO5.O2.A3	Develop a long-lasting management plan for the Bom Sucesso Botanical Garden	By 2025
SO5.O3	Develop and implement PNOST Business plan to secure long-lasting funds for effective conservation of the PNOST and wider landscape	High	SO5.O3.A1	Support development of PNOST Business Plan by identifying best mechanisms (e.g. Conservation Trust Fund, Payment for Ecosystem Service, Eco-Tourism)	Expected in 2021
			SO5.O3.A2	Support the implementation of the PNOST Business Plan	2022
			SO5.O3.A3	Promote & support the National Sustainable Finance Plan for Biodiversity and PAs, which integrates the PNOST Business Plan	2023
			SO5.O3.A4	Support the Creation of a Conservation Trust Fund for STP biodiversity conservation and PAs, including for the PNOST	2023
SO5.O4	Seek further funding opportunities for the PNOST and buffer zone through public aid and cooperation	Low	SO5.O4.A1	Capacitate PNOST staff in fundraising, with the help of civil society and projects	By 2025
SO6	Communication - Advocacy				
SO6.O1	Build-on the Obô-Ôvyô communication campaign to raise awareness on PNOST	Medium	SO6.O1.A1	Develop communication campaign/material for communities and forest users	Continuous
			SO6.O1.A2	Develop education campaign/material for schools and STP youth	Continuous

	biodiversity, threats, opportunities, and regulations, and promote sustainable resource use in the buffer zone, to secure long-lasting local, regional, and international visibility		SO6.O1.A3	Develop communication campaign/material for government and directorates	Continuous
			SO6.O1.A4	Develop communication campaign/material for public and private sectors with a direct or indirect impact on biodiversity and PNOST management	Continuous
			SO6.O1.A5	Animate social media with PNOST activities, achievements and lessons learned	Continuous
SO6.O2	Develop specific communication material for the PNOST and buffer zone	Low	SO6.O2.A1	Design & launch a website to share information about the PNOST	By 2025
			SO6.O2.A2	Develop a guidebook about PNOST and surrounding forests fauna and flora	2022
			SO6.O2.A3	Develop flyers, maps, guidebooks about PNOST biodiversity, trails, history, etc.	Continuous
SO6.O3	Participate in the strengthening and coordination of Civil Society and Community-Based Organisations network, to guide interventions in/around the PNOST and enhance advocacy efforts for the PNOST	Medium	SO6.O3.A1	Participate in the capacity building of NGO/CSOs, by sharing PNOST values and challenges and integrating PNOST management objectives in their training	2022
			SO6.O3.A1	Develop coordination mechanisms to strengthen NGO/CSOs network & facilitate information sharing to improve advocacy for the PNOST & buffer zone	By 2025

In order to implement this Action Plan, detailed activity description, associated funding sources* and identified partners**, as well as their respective responsabilities, will be identified at the beginning of each year in the Annual Work Plan, which will be produced participatorily by the PNOST management team and derived from this Action Plan (see Part IV). In addition, to monitor annual progress on the Action Plan, a Monitoring and Evaluation system, including a logical framework with adequate indicators is proposed in the Part IV of this Plan, and will have to be updated every year, for keeping track of annual successes, challenges and lessons learned.

	Monitoring and Evaluation of the PNOST MP				
M&E	Develop a PNOST MP Monitoring & Evaluation plan, based on available resources & capacity, for long-lasting analysis of management efficiency and conservation successes	High	ME1	Annually update the work plans based on Management Plan	Annually
			ME2	Develop indicators for the activities of the annual work plans	Annually
			ME3	Ensure integration and update of the Mangrove Management Plans of Malanza and Praia das Conchas	2023, 2025
			ME4	Update the PNOST Management plan at mid and end term	2023, 2025

**Potential funding source for most SO/activities includes the EU funded ECOFAC6 project; the Rainforest Trust project; the UNDP-GEF funded Biodiversity project; the EUD funded Landscape Project, CEPF small-grants projects and the Prince Albert Foundation project. For livelihood and development activities (SO4), an additional funding opportunity is the IFAD-GEF funded project; and for specific surveillance (SO2) and tourism (SO5) activities (namely Monte Carmo roça rehabilitation) the Socfin/Agripalma RSPO compensation scheme represent a funding opportunity.*

***Potential partners and projects supporting specific activities includes the CBGG, Tesouro d'Obô project, CE3C University of Lisbon, Cibio-Inbio University of Porto, CAS, Microland, Forest Giants project, Programa Tatô, Fauna & Flora International, Oikos, RSPB, SPEA, etc.*

III.4 Park's Management Zones boundaries and regulations

III.4.1 Extract from Law n°6/2006

As per the law n°6/2006, the Park foresees the existence of three distinct types of management zones:

a) Integral preservation zone

Central, primitive or intangible areas which function as nature reserves within the Park. Activities involving anthropic alteration of biota (fauna and flora) are prohibited in these areas; with the exception of (i) public visits, to be carried out under the conditions laid down in the Park's regulation, (ii) scientific observation activities, research & studies or implementation of management measures associated with the Park conservation objectives, (iii) any associated works as required for the implementation of (i) and (ii).

b) Controlled exploitation areas

Controlled exploitation areas allow a moderate and self-sustaining use of fauna and flora, regulated in order to ensure the maintenance of natural ecosystems. The areas may be devoted to eco-tourism and non-agricultural forms of economic development, which benefit the resident and neighbouring communities of the Park.

c) Buffer zone

The law also foresees the existence of a buffer zone, beyond the boundaries of the Park, where sustainable use of natural resources should be promoted.

The boundaries of the different zones form an integral part of the Park's management plan (see III.4.1 and III.4.2) and the zoning development approach is detailed in Annex 6.
The uses of the different zones are defined in the associated regulations, provided in this Plan (Table X), and following the following guidelines (prohibited and conditioned activities) from law n°6/2006:

The law stipulates that within all areas of the Park, is **prohibited:**
(1) the exercise of any activity that harm the environment and the natural balance of the ecosystems;
(2) the execution of lots, constructions, projects of equipments and infrastructures or others that may eventually alter the occupation and topography of the soil;
(3) the exercise of such activities in the integral preservation areas or in the controlled exploitation areas shall be suspended, under penalty of the sanctions provided in the law.

And **Conditioned activities** are:

(1) without prejudice to the prohibited activities, within the zones of controlled exploitation inside the Park, the following activities shall be subject to licensing:
   a. Alteration of landuse, particularly in forest areas, wetlands and the entire riparian zone;
   b. Installation of overhead electrical or telephone lines;
   c. Building, construction, reconstruction or extension;
   d. Cutting or harvesting of any botanical species of shrub or tree origin, particularly from the forest, in non-agricultural areas, as well as the introduction of exotic botanical species or alien species;
   e. Introduction of new exotic zoological species;
   f. Hunting or seizure of any animal species;
   g. Establishment of new industrial activities: forestry, agriculture, minerals or tourism;
   h. Discharge of domestic or industrial effluents (solid, liquid or gaseous) which may cause air, soil or water pollution;
   i. Drilling of wells or water catchment, and establishment of water distribution or drainage networks;
   j. Installation of sewage treatment plants.
(2) The current exercise of these conditioned activities shall be the object of assessment and, if necessary, subject to the changes required for its suitability for the purposes of the Park.

The law mentions that license applications must be submitted to CONFFAP and Park Director for approval (as well as submitted to mangement board opinion) before issuance by the latter. License application shall include environmental impact studies when it refer to rural land consolidation, agricultural or maritime hydraulics, aquaculture and salt extraction, transportation of electric energy, roads, ports or airfields, camp sites or tourist developments, allotments and urbanization and sewage treatment station. CONFFAP was indicated as technical support for the IAS and license applications which are not approved within a period of 90 days are deemed to be tacitly approved. License fees shall be fixed by joint orders issued by the supervising Minister and the Minister of Planning and Finance.

Thus, management zones boundaries and uses regulations endorsement and decree by STP government, as well as the setting of a functional licencing system for conditionned activities, which should at least be conditionned by previous review and approval by the PNOST Management Council, are an integrating part of the Action Plan for this iteration. It will allow to operationalize the law 6/2006, taking into consideration the current institutional arrangements of the PNOST.

III.4.2 Zoning of the Core Area

The core area of the PNOST is composed of six (6) macro-management areas, taking into consideration the territorial discontinuity of the PNOST (Figure 11, Table 8):

Integral Preservation zones:

1) Central massif – Integral protection zone I
2) Central massif – Integral protection zone II
3) Central massif – Integral protection zone III

Controlled exploitation areas:

4) Central massif – Partial protection zone, for eco-responsible development
5) Savannah of Praia das Conchas and Lagoa Azul
6) Mangrove of Malanza

Buffer zone (see III.4.3)

Inside the core area, seven (7) micro-management areas were also identified were specific regulations apply: (1.a) Monte Carmo Roça conservation hotspot; (3.a) Bom Sucesso / caminho do fugido; (3.b) Contador mini-hydrique water catchment; (3.c) Lagoa Amelia micro-ecosystem; (4.a) São Miguel bay; (5.a) Praia das Conchas and Praia Quinze mangroves; (6.a) Malanza mangrove (wetland) (Figure 13).

Each zone characteristics, specific activities and regulations are described below. The methodological approach to identify the management zones is detailed in Annex 10; and detailed high-quality maps of each zone are provided in Annex 11.

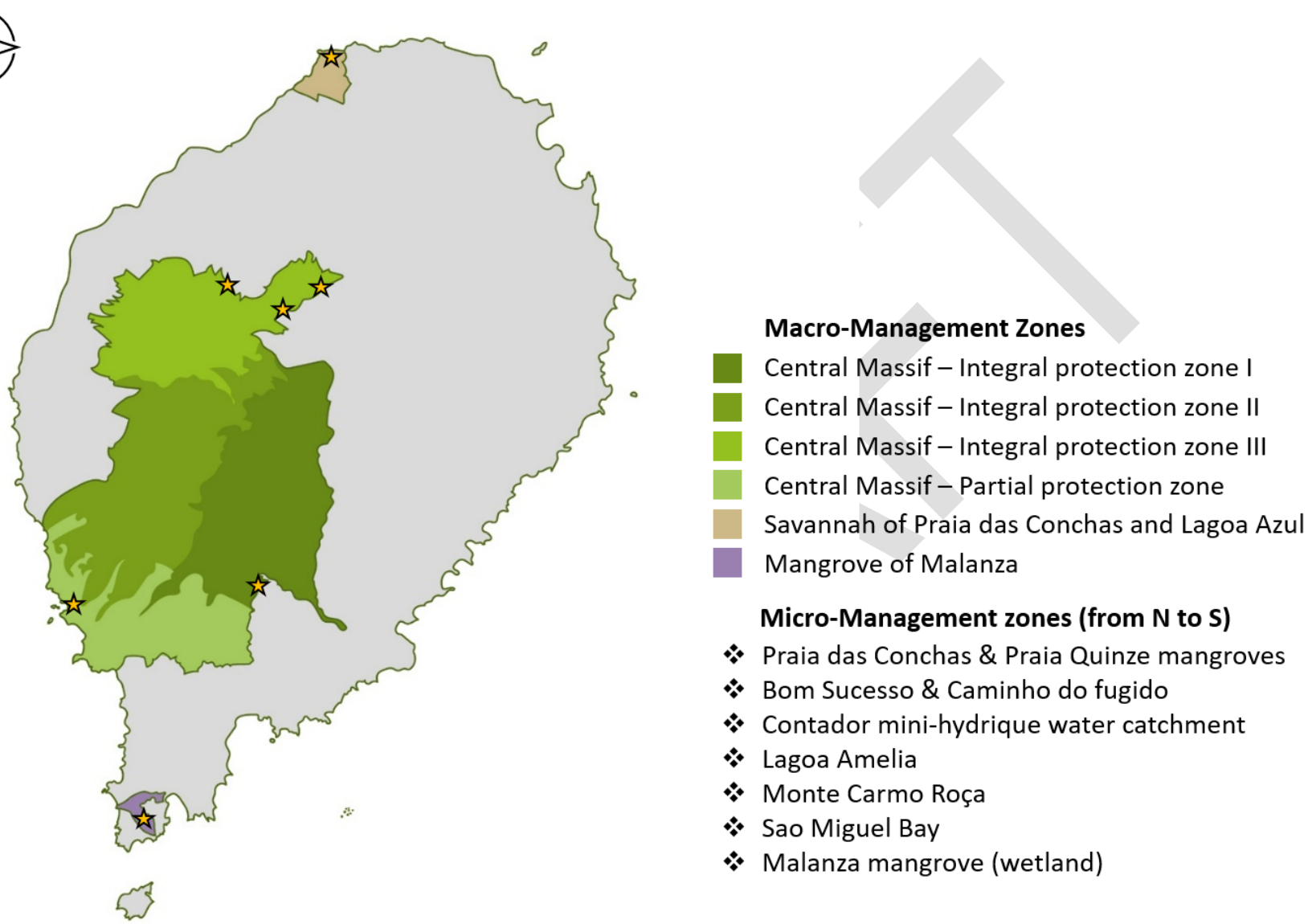

Figure 12. Zoning of the PNOST core area: the 6 macro-management (in colours) and 7 micro-management zones (stars); scale: X cm for X m

Table 8. Zoning of the PNOST core area: Description and main management objectives for each zone

ID	Zone	Description (biodiversity value & challenges)	Management objectives
Macro – Management zones			
	Integral Preservation zones (sensu law 6/2006)		
1	Central Massif – Integral Protection zone I	Both all birds species richness (ABS) and endemic bird species richness (EBS) models show highest values in this zone (EBSM~[12,14], Soares 2017). The 3 endemic CR birds (São Tomé dwarf ibis, São Tomé fiscal and São Tomé grosbeak) probably occur (Soares 2017). It is in particular home to the dwarf ibis, extremly localized in São Tomé. Mainly covered by native forest (Soares 2017); which is also the main habitat for Giant Obo Snails (Panisi et al. 2020).	Surveillance and monitoring activities is enhanced to preserve this critical habitat for key endemic and endangered species. Research is promoted on priority themes for management, e.g. habitat and species status and conservation, climate change impact, ecossystem services, etc.
2	Central Massif – Integral Protection zone II	Both all birds species richness and endemic bird species richness models show high values in this area (EBSM~[11,12.5], Soares 2017). At least 2 (São Tomé fiscal, São Tomé grosbeak) and probably 3 endemic CR birds occur in this area (Soares 2017). Mainly covered by native forest (Soares 2017); which also is also the main habitat for Giant Obo Snails (Panisi et al. 2020). Area well preserved but subject to human pressure (natural ressources extraction) on its western border.	While a high level of monitoring and surveillance is ensured, the area is well suited to the development of nature expeditions and other thematic activities (e.g. birdwatching), with an associated set of limitations (limited number of visitors, compulsory certified guide or park official, etc.). Research is promoted in priority themes for management, e.g. habitat and species status and conservation, impact of eco-tourism on biodiversity, etc.
3	Central Massif – Integral Protection zone III	Both all birds species richness and endemic bird species richness model show intermediate values in this zone (EBSM~[9,12], Soares 2017). 2 Endemic CR bird (São Tomé fiscal, São Tomé grosbeak) probably occur in this area (Soares 2017). Mainly covered by native forest (Soares 2017); which also is the main habitat for Giant Obô Snails (Panisi et al. 2020). Occurrence of endemic bat *Miniopterus newtoni* (Rainho et al. 2010); and historical record of São Tomé Collared fruit bat (*Myonycteris brachycephala,* EN) just outside the Park border. Most PNOST touristic facilities are concentrated in this zone, incl. c. 72 km of promoted and regularly maintained hiking trails, starting from the Bom Successo Botanical Garden, main PNOST entrance & operational center. Important encroachment by agricultural expansion (horticulture) around the Botanical Garden and water catchment development in the Park (see micro-management zones)	Surveillance and monitoring is enhanced. Adequate management models are developped for the tourism facilities and infrastructures of the Park, including for their regular maintance. Research is promoted in priority themes for management, e.g. eco-tourism impact on biodiversity to reduce biodiversity erosion in this zone, etc. Synergies with academia is promoted through pedagogical visits and studies/internships in the Park.

	Partial Protection Zones (or Controlled Exploitation Areas sensu law 6/2006)		
4	Central Massif – Partial Protection zone	All birds species richness as well as endemic bird species richness models show lower index values in this area compared to the rest of the PNOST Central Massif (EBSM~[9,11], Soares 2017), but still higher than in the rest of the island. Mainly covered by secondary forest (Soares 2017). Presence of old secondary forests and a mosaic of habitats created by its edge between native & secondary forest on one side, and between secondary forest & coastal ecossystem on the other side. Area with some level of human pressure, incl. construction of temporary & permanent settlements for extraction of forest resources (palm wine, logging, etc.).	Area well suited to the development of nature expeditions and other thematic activities (e.g. birdwatching, cultural and/or boat tours), with an associated set of limitations (limited routes, compulsory certified guide, etc.). Increased surveillance patrols are made for the control and monitoring of the area, coupled with sensibilization campaigns, to avoid further settlements and forest degradation in this area.
5	Savannah of Praia das Conchas and Lagoa Azul	Area composed of a unique wooded savannah, and two small mangroves (see micro-management zones, and Figure 13). Characterized by unique vegetation formations in the alluvial valleys, arboreal and herbaceous savannah (Praia das Conchas Management Plan 2020-2025). 1 historical record of endemic & endangered (EN) São Tomé free-tailed bat (*Chaerephon tomensis*) (Rainho et al. 2010). Threatened sea turtle species nest on the beaches every year. This area experiences medium to high level of human pressure, in particular tree felling for charcoal and slash & burn agriculture (Praia das Conchas Management Plan 2020-2025).	Increased surveillance patrols coupled with sensibilization campaigns are in place, to promote alternative activities and enforce good practices. This area has an important role to play in terms of environmental education, and alternative and sustainable activities (vs. damaging traditional ones) are developed and supported to valorize this area for ecotourism (e.g. wildlife tours focused on savannah & coastal birds, and marine fauna).
6	Mangrove of Malanza	Largest and deepest mangrove ecosystem at the national level (up to 3.5m deep in the inland channels), composed of the riparian forest edge and the mangrove itself (see micro-management zones, and Figure 13). Unique mangrove forest in the country with great expression of riparian flora, and endemic fauna species. Birds species assemblage typical of coastal mangrove habitat (Malanza Management Plan 2020-2025). Critical sea turtle nesting beach in Praia Jalé, at the western edge of the area. Surrounded by a mosaic of habitats, mainly secondary forests, coconut and palm oil tree plantations, probably critical for many species (birds, bats, reptiles, amphibians, etc.), but also at risk of encroachment and alteration by unregulated agriculture and tourism developments (Malanza Management Plan 2020-2025)	Increased surveillance patrols coupled with sensibilization campaigns are in place, to promote and enforce good agricultural and eco-tourism practices. Alternative activities for surrounding communities are developped and supported (e.g. community based ecotourism, etc.) and adequate management models are in place (PPPs, community-based management, etc.)
Micro-management zones			
1.a	Monte Carmo roça	Delimited by a radius of 2km around the old Monte Carmo roça (lat 0.145437°, long 6.578655°).	Development of a PNOST entrance, including the rehabilitation of the old Monte Carmo roça into a centre for research, eco-tourism and surveillance,

	conservation hotspot	Low elevation forests holding a comparatively high density of Sao Tomé dwarf ibis, São Tomé Grosbeak and São Tomé Fiscal. Monte Carmo forests are considered a priority for conservation, which might include bird-based tourism (Olmos, 2010).	with the potential to become an international reference for evidence based PA management and island conservation.
3.a	Bom Sucesso & caminho do fugido	Delimited by the Bom Sucesso Botanical Garden at the Park boundary and including all encroached area by agriculture developments inside macro-management Zone 3, well visible on the ground and on satellite images, along Caminho do fugido hiking trail. The Bom Sucesso Botanical Garden is currently the main PNOST entrance, interpretation and ecotourism center, rehabilitated in 2020 (through EU/ECOFAC6).	A sustainable management model is developed for the maintenance and valorisation of the Bom Sucesso Botanical Garden. Alternative activities are promoted and Park regulations are enforced to limit encroachment and support sustainable livelihoods.
3.b	Contador mini-hydrique water catchnment	Delimited by the water catchment line along the northern boundary of the PNOST, and including a band of 500m on each side of this line. Rehabilitation/expansion project of a degraded 50-year old hydroelectric power system, in the Contador river waterched; of category B in the WB's Environmental Assessment classification due to the small size and site-specific nature of its anticipated social and environmental risks and impacts. The upper part of the Contador river watershed, within the PNOST, is of high environmental value for ecosystem services (water) and for biodiversity; i.e. native forest, secondary lowland forest, cliffs and streams habitats where endemic bats have been observed (*Miniopterus newtoni* and *Panaspis africana (VU)*).	Monitoring of this area is enhanced to ensure good environmental practices on the ground Ecosystem restauration activities (reforestation) are supported.
3.c	Lagoa Amelia micro-ecosystem	Delimited by the Lagoa Amelia contour shape (Albuquerque et al. 2015). The Lagoa Amélia is a swamp in the crater of an inactvie ancient volcano, where rainwater is collected, thus constituting an important fresh water reserve of the country, at the origin of several springs. The ecosystem and original vegetation is unique and constitutes a "hotspot" of biodiversity and endemism, and many species are only found here or in Pico de São Tomé, the highest point in island. It is threatened by the invasion of invasive plant species and the incursion of tourists on the swamp which causes a continuous compression of the soil.	Eco-tourism regulations and good-practices are enforced, in particular a strict no off-trail hiking and limited number of visitors per day policy to avoid erosion and limit the spread of invasive species. Research is promoted on priority themes for management, e.g. flora, eco-tourism impact, invasive species, and ecosystem restauration.
4.a	São Miguel bay	Delimited by a radius of 1km around the old roça of São Miguel (lat 0.137271°, long 6.492870°). Illegal settlements and construction of houses occur increasingly, initially for palm wine and forest resources extraction, now turning into permanent settlements.	Increase surveillance and monitoring (incl. by boat) to enforce Park regulations to prevent further settlements, and promote good practices and sustainable natural resources use by already settled communities.

5.a	Praia das Conchas e Praia Quinze mangroves	Delimited by the two mangroves of Praia das Conchas and Praia Quinze (Albuquerque et al. 2015, Figure 13), located a few hundred meters from each other and estimated to cover 0.8 ha. Resident, colonizing and visiting ichthyofauna species occur, including nursery areas of species of commercial interest. The freshwater area, upstream of the bridge, is dominated by an exotic species, tilapia, with potential to significantly alter the ecological balance of the mangrove. The current road system is limiting exchanges between the marine and freshwater environment.	All specific interventions are detailed in the Management Plan of the Praia das Conchas Mangrove 2020-2025.
6.a	Malanza mangrove (wetland)	Delimited by the mangrove water system (Albuquerque et al. 2015, Figure 13). It holds a low diversity of macroinvertebrates tolerant to high environmental stress levels, e.g. decapods (crabs), including two species of gastronomic interest, blue crab (*Callinectes sp*.) and babanca (*Senilia senilis*), a very large bivalve. The ichthyofauna includes various resident species, an indicator of reasonable mangrove conservation status, and species of commercial interest, e.g. mullet (VU), and the exotic tilapia, which can significantly alter the mangrove ecological balance. The current bridge is limiting exchanges between marine and freshwater.	All specific interventions are detailed in the Management Plan of the Malanza Mangrove 2020-2025.

Figure 13. Zoning of the PNOST core area: detail of the macro-management zone of “Savannah of Praia das Conchas and Lagoa Azul” (left, in yellow) and its associated micro-management zone of “Praia das Conchas & Praia Quinze mangrove” (left, in orange); and the macro-management zone of “Malanza mangrove” (right, in yellow) and its associated micro-management zone in green (right) (maps from Albuquerque et al. 2015).

Table 9: Summary of PNOST regulations per management zone; Activities permitted (i.e. subject to previous authorisations by relevant institutions and payment of established fees to Park authority), controlled (i.e. subject to specific authorisations and quotas/limitations by relevant institutions and Park authority), or prohibited in each zone.

Activities / Zone	*Central Massif – Integral Protection Zone*	*Central Massif – High protection zone I*	*Central Massif – High protection zone II*	*Central Massif – Partial protection zone*	*Savannah of Praia das Conchas and Lagoa Azul*	*Mangrove of Malanza*
Activities likely to affect land-use and/or degrade ecosystem health: agriculture, forestry and livestock	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Wildlife collection and hunting	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Extraction of forest resources, i.e. timber/wood and/or non-wood products, and inerts such as soil, sand, rocks; except for research sampling	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Execution of lots, constructions, equipment and infrastructure projects that may modify soil occupation	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Research expeditions, biological and ecological studies including data collection	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted
Excursionism and educational expeditions, focussed on birdwatching or other authorized theme, accompanied by certified eco-guides or officials of the PNOST	Controlled in Monte Carmo zone, else prohibited	Permitted	Permitted	Permitted	Permitted	Permitted
Hiking along marked trails following tourism best practices as identified in relevant documents (PNAE)	Controlled in Monte Carmo zone, else prohibited	Permitted	Permitted	Permitted	Permitted	Permitted
Camping in designated facilities along trails according to site-specific conditions, e.g. 0-waste policy	Controlled in Monte Carmo zone, else prohibited	Prohibited	Permitted	Permitted	Prohibited	Prohibited
Recreational use of the beaches and coastal areas, respecting visitors good practices and zero-waste policy	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Controlled	Controlled
Construction of light infrastructure, following bioconstruction technics, for visitation and research (e.g. camping platforms, interpretation boards, etc.)	Prohibited	Prohibited	Permitted	Permitted	Permitted	Permitted
Rehabilitation of infrastructure and/or construction of infrastructure around the existing one, following the principles of bioconstruction or original practices	Controlled in Monte Carmo zone, else prohibited	Prohibited	Controlled in Bom Sucesso & Contador zone, else prohibited	Permitted (subject to license)	Permitted (subject to license)	Permitted (subject to license)
Construction of any type of habitation/settlement, temporary or permanent	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Extraction of some forest resources, i.e. NWFP, subject to previous authorisations and quotas/good practices of collection set by relevant institutions and Park authority	Prohibited	Prohibited	Prohibited	Controlled in Sao Miguel Bay zone, else prohibited	Controlled	Controlled

Traditional fisheries activities, subject to previous authorisations and quotas/good practices of collection set by relevant institutions and Park authority	Not Applicable	Not Applicable	Not Applicable	Controlled in Sao Miguel Bay zone, else prohibited	Controlled	Controlled
Use of Mangrove waters for personal hygiene and/or laundry ; and any obstruction of the passage of water	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Prohibited	Prohibited

III.4.3 Zoning of the buffer area

The PNOST buffer zone, initially described in the law as a band of 250m to 10km wide from the PNOST boundary, was never properly delimited nor regulated. Therefore, most of its limits were in conflict with local land use activity, including informal agroforestry systems and agricultural concessions, and are not always meaningful for the protection of the island's biodiversity. Thus, based on available knowledge and orienting documents for the island of Sao Tomé (Annex 10) four levels of information are considered in the zoning:

a. High Conservation Value areas (BirdLife, 2019),
b. Conservation Forests (PNOT, 2020),
c. Buffer zone (law 6/2006; in PNOST Management Plan 2015-2020),
d. Agripalma plantation (Socfin, 2020).

Based on the overlay of the above geo-referenced information layers, 4 macro-management areas are identified in the PNOST buffer zone (Figure 14), ordered by level of importance for biodiversity conservation:

A. High Conservation Value areas
B. Conservation forests
C. Conservation agriculture areas
D. Sustainable palm oil production

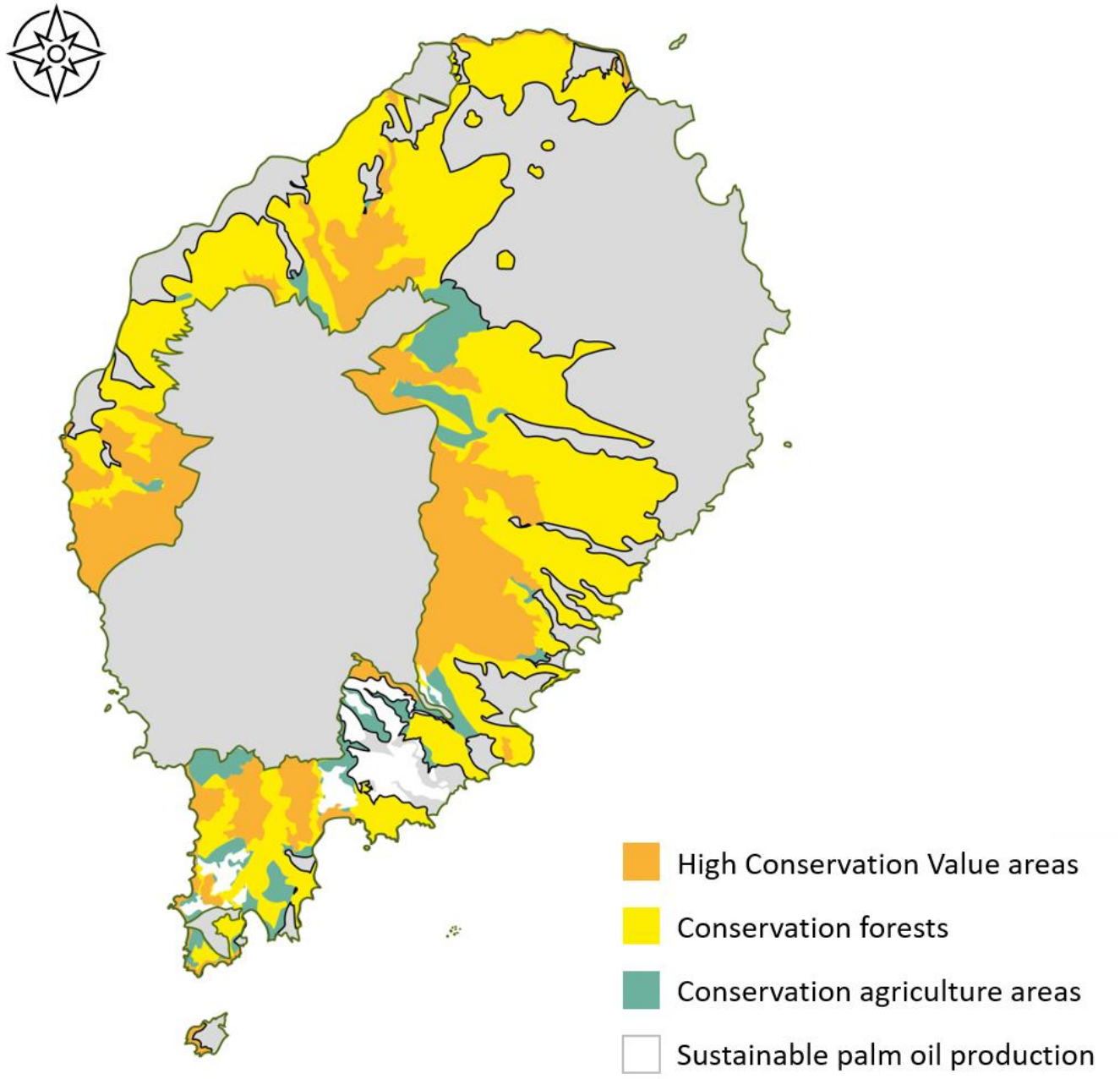

Figure 14. PNOST buffer zone limits (in black) and macro-management areas ordered by importance for biodiversity protection in the PNOST surrounding forests, first the High conservation Value Forests (orange, BirdLife 2019), second the PNOT Conservation Forests (yellow, DGA/PNOT 2020), third the Conservation Agriculture/Buffer zone limits as in law 6/2006 (green), and ultimately the sustainable palm oil concessions (white). Scale: X cm for X m.

A. HIGH CONSERVATION VALUE AREAS (buffer zone)

Description: A preliminary analysis carried out in 2019 led to the preliminary identification of potential High Conservation Value areas in São Tomé, including 19 separate areas (BirdLife, 2019). Further synergies with the Associação Programa Tatô, sea turtle conservation program in São Tomé Island, suggested the inclusion of two additional sites: *Southwest of Ilhéu das Rolas* and *North Coast between Praia das Conchas and Diogo Nunes*. The current 21 HCVs, based primarily on an assessment of existing biodiversity values, were validated through public consultations in January-February 2021, informing and engaging relevant stakeholders, while weighing these values against socio-economic interests (Annex 12). HCVs limits were identified on the ground to avoid overlap with agricultural concessions of familial agriculture; and flora data from the CEPF-funded project 'Characterization of the threatened flora of São Tomé & Príncipe' (May 2019-December 2020) aiming at identifying threatened plant species using categories and criteria of IUCN, characterize their distribution, habitat and current threats, completed the identification process. Additional studies are planned to identify HCV5 & HCV6 areas by mid-2021.

Regulations: Set of permited, controled and prohibited activities, in particular for the extraction and use of natural resources, resulting from communities consultations in January-March 2021, to be formally published and endorsed by Gov-STP. These regulations will be considered as an integral part of this MP.

Key Interventions: To develop regulations and innovative and sustainable management plans for these areas, and ensure their integration in National spatial planning orienting documents (e.g. PNOT).

B. CONSERVATION FOREST (buffer zone)

Description: Limits as defined in the National Territory Planning (PNOT 2020). "Conservation Forests" are defined as the forest area characterised by the presence of species or habitats which, due to their composition, structure, use or importance, should be subject to specific conservation and sometimes rehabilitation measures. It integrates all the forest included in Natural Parks and the forest patches in IBA. Forest and agroforestry areas with associated risks, such as the risk of erosion and landslides, are also considered integrated in this class (PNOT 2020).

Regulations: 'Conservation forests' are areas whose ecological and conservation interest would justify their inclusion in areas with some protection status but are not currently recognised (PNOT 2020). To achieve this objective, the PNOT Action Plan (2020) established the following guidelines/directives:

- "DE4 (local level) - For areas that possess natural values but do not benefit from any recognition (official or unofficial), it is necessary to define a protection/conservation/management norm that allows them to be maintained and improved, with a view to re-establishing increasingly enriching conditions for the natural heritage of São Tomé and Prince. An example is the forest areas, which may not be included in any areas with conservation status, but which are recognised as having conservation value (classified in this Plan as Conservation Forests) and which should be subject to specific rules for their use in the preparation of Master Plans (regional and district).
- DE5 (local level) - It is the responsibility of the master plans (regional and district) to consider the most appropriate soil qualification taking into account the safeguarding of the values to be protected and the promotion of their valorisation, clearly identifying and regulating the conservation forest areas and natural spaces."

Interventions: The PNOT Action Plan (2020) identifies interventions to be realized by 2025 and by 2030 for the Management of Conservation Forests, to be led by the relevant institutions of STP Government; including (i) the update of the forest policy to propose adequate forest conservation and exploitation regulations and management guidelines and (ii) the improvement of knowledge on the conservation status of forests (see PNOT 2020).

C. CONSERVATION AGRICULTURE AREAS (buffer zone)

Description: Limits as proposed in law 6/2006 and as presented in the previous PNOST management plans in 2009 and 2015 (Albuquerque et al. 2009; 2015). The Conservation Agriculture Area "extends beyond the limits of the PNOST, in a strip whose width may vary between 250 metres and 10 kilometres".

Regulations: Based on law 6/2006, set of permited, controled and prohibited activities, in particular for the extraction and use of natural resources, to be formally published and endorsed by Gov-STP. These regulations will be considered as an integral part of this MP.

Key Interventions: This area focus on the promotion of NTFP value chains and high value-added niche agriculture (e.g. cocoa, coffee, NTFPs, medicinal plants).

D. SUSTAINABLE PALM OIL PRODUCTION (buffer zone)

Description: Socfin / Agripalma active concessions (i.e. 2,100 ha planted of the 4,917ha concession in the south of São Tomé) in the island of São Tomé.

Regulations: Aligned with RSPO guidelines.

Key Interventions: Guide good practices and compensation activities for conservation and monitor compliance with RSPO guidelines to prevent harmful developments and/or activities.

III.4.4 Updated zoning of Park and buffer zone

Illustrative (Figure 15), topographic (Figure 16) and satellite maps (Figure 17) of the zoning of the Park and buffer area are presented below, and the summary of each management zone coverage is detailed in Table 9.

Table 9. Synthesis Zoning table of the PNOST and its buffer zone - *To be completed when final zones boundaries are set.*

	Macro- Management Zone	Associated protection Level from law 6/2006	Area (Ha)	Area (Ha)	Area (Ha)	Area (Ha)
1	Central Massif – Integral Protection I	Integral preservation				
2	Central Massif – Integral Protection II					
3	Central Massif – Integral Protection III					
4	Central Massif – Partial protection	Controlled exploitation				
5	Savannah of Praia das Conchas and Lagoa Azul		525.8			
6	Mangrove of Malanza		230.8			
A	High Conservation Value areas	Buffer zone				
B	Conservation Forests					
C	Conservation Agriculture areas					
D	Sustainable Palm Oil Production					

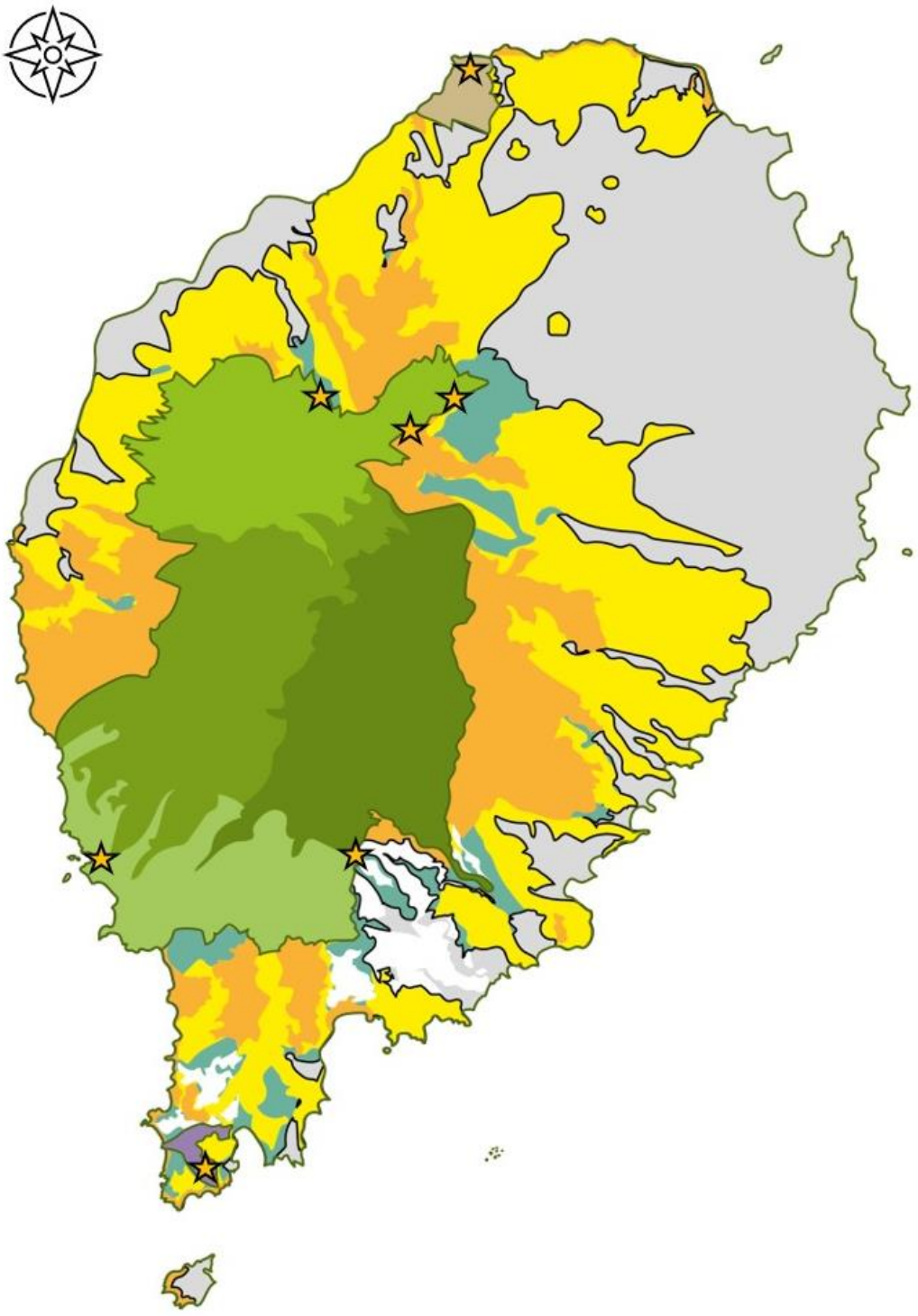

Figure 15. PNOST limits (dark green), buffer zone limits (black) and associated macro-management zones; 6 macro-management zones for the PNOST (including 4 in the Central Massif and 2 separate zones of Savana – in the North, and Mangrove – in the South); and 4 macro-management areas inside the Buffer Zone. Scale: X cm for X m.

Figure 16. Topographic map of PNOST core area and buffer zone limits and associated macro- and micro-management zones; Scale: X cm for X m.

Figure 17. Sattellite map of PNOST core area and buffer zone limits and associated macro- and micro-management zones; Scale: X cm for X m.

PART IV - IMPLEMENTATION AND MONITORING OF THIS PLAN

IV.1 Administrative alignment for the implementation of this Plan

In order to implement this Plan, the operationalization of the institutional framework, as well as the administrative alignment of the PNOST human resources are an integral part of this Plan.

In close partnership with the MAPDR and line directorates, with the support of the civil society, the PNOST has an enlarged technical team with clear mandates and responsibilities in relation to the type of activity (logistics, monitoring and conservation, awareness raising, botanical collection maintenance, Figure 18).

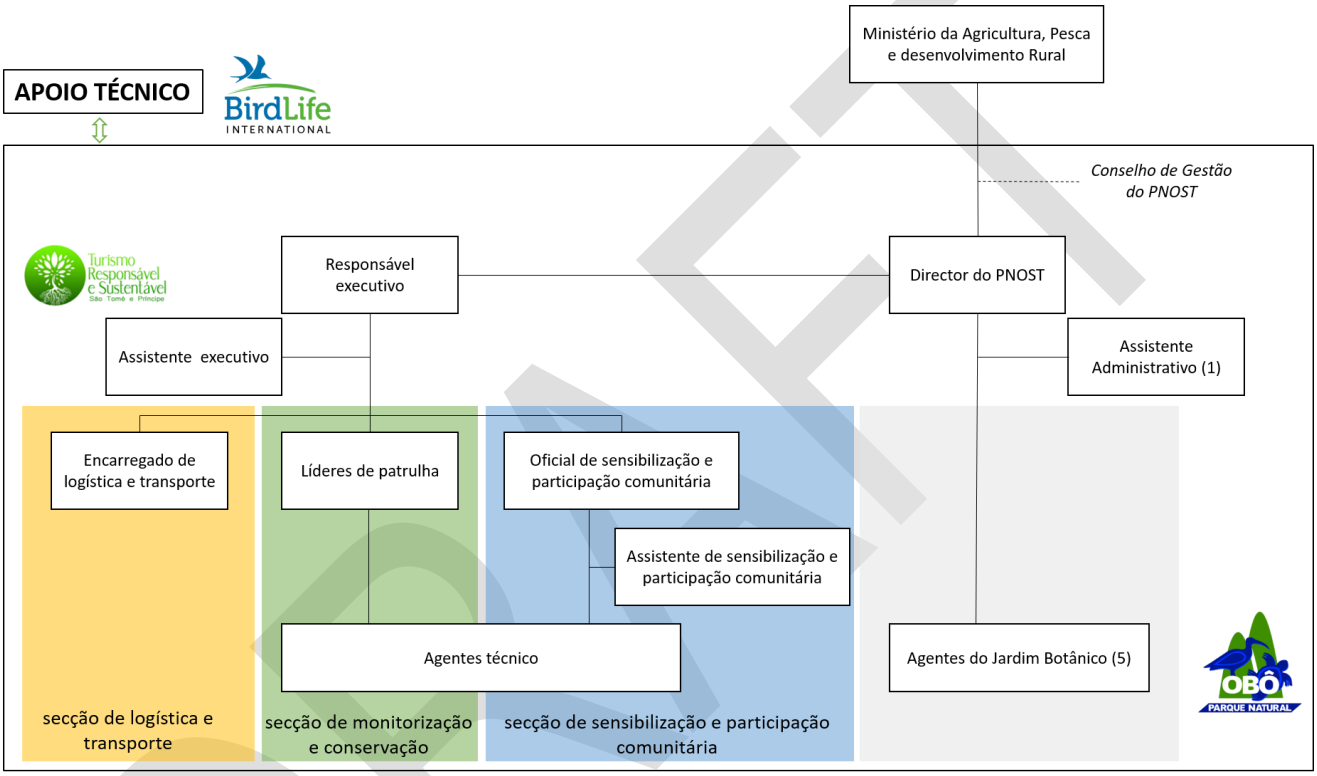

Figure 18. PNOST organigram including the Obô Guardians cohort

In order to effectively implement this Plan and monitor its achievements, the management team, with support from the PNOST Management Council (to be set as part of this Management Plan, see SO1.O5) and from the civil society, shall,

- Convene regular participatory management meeting to ensure the implementation of this plan;
- Assess annual progress with regards to this Plan, by updating the proposed logical framework (IV.2);
- Develop Annual Work Plans based on the Action Plan (III.4) and updated according to progress assessment (2021 Work Plan is available in Annex 13 of this Plan and can be used as a template for the following years);
    - Identify responsible parties for each activity of the Annual Work Plan,
    - Propose provisional budget for the Annual Work Plan,
    - Validate the Work Plan, incl. resposabilites and budget with relevant stakeholders
- Ensure the activities are aligned with other Management documents (i.e. Praia das Conchas and Malanza Management Plans 2020-2025);
- Update and revise this Plan for the next iteration period.

IV.2 Logical Framework for monitoring and evaluation

Table 10: Logical framework for the PNOST Management Plan 2020-2025

code			*Outcomes & Activities*	*Indicators / Outputs*	*Baseline (2020)*	*Target (2025)*	*Assumptions*
SO1							
	SO1.O1						
		SO1.O1.A1					
		SO1.O1.A2					
	SO1.O2						
		SO1.O2.A1					
		SO1.O2.A2					
		SO1.O2.A3					
	SO1.O3						
		SO1.O3.A1					
		SO1.O2.A2					
		SO1.O3.A3					
	SO1.O4						
		SO1.O4.A1					
		SO1.O4.A2					
	SO1.O5						
		SO1.O5.A1					
		SO1.O5.A2					
SO2							

IV.3 Chronogram of activities

Table 11: Chronogram of PNOST Management Plan activities from 2021 to 2025

	S1 2021	S2 2021	S1 2022	S2 2022	S1 2023	S2 2023	S1 2024	S2 2024	S1 2025	S2 2025
SO1.O1										
SO1.O2										
SO1.O3										
SO1.O4										
SO1.O5										
SO2.O1										
SO2.O2										
SO2.O3										
SO2.O4										
SO2.O5										
SO3.O1										
SO3.O2										
SO3.O3										
SO3.O4										
SO3.O5										
SO4.O1										
SO4.O2										
SO4.O3										
SO4.O4										
SO4.O5										
SO5.O1										
SO5.O2										
SO5.O3										
SO5.O4										
SO6.O1										
SO6.O2										
SO6.O3										
M&E										

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ANNEXES

See file with all annexes ("20210315_PNOST MP ANNEXES_Working Progress.doc"), to be compiled in this document at the end of the revision process.