GEF-8 PROJECT IDENTIFICATION FORM (PIF)

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General Project Information

Project Title	
Enhance the adaptative capacity to floods and water security in São Tomé and Principe	
Region Sao Tome and Principe	GEF Project ID 11544
Country(ies) Sao Tome and Principe	Type of Project FSP
GEF Agency(ies): UNDP	GEF Agency ID 9839
Executing Partner Directorate of Environment and Climate Action (DAAC), Ministry of Environment	Executing Partner Type Government
GEF Focal Area (s) Climate Change	Submission Date 3/20/2024
Project Sector (CCM Only) Climate Change Adaptation Sector	

Taxonomy

Local Communities, Stakeholders, Municipal Financing, Sustainable Cities, Integrated Programs, Knowledge Exchange, Capacity, Knowledge and Research, International Waters, Freshwater, Aquifer, Focal Areas, Forest, Congo, Forest and Landscape Restoration, Climate Change, United Nations Framework Convention on Climate Change, Nationally Determined Contribution, Climate Change Adaptation, Climate resilience, Climate information, Private sector, Livelihoods, Small Island Developing States, Least Developed Countries, Disaster risk management, Ecosystem-based Adaptation, Biodiversity, Protected Areas and Landscapes, Community Based Natural Resource Mngt, Terrestrial Protected Areas, Chemicals and Waste, Influencing models, Strengthen institutional capacity and decision-making, Demonstrate innovative approache, Convene multi-stakeholder alliances, Civil Society, Non-Governmental Organization, Community Based Organization, Private Sector, Individuals/Entrepreneurs, SMEs, Financial intermediaries and market facilitators, Type of Engagement, Information Dissemination, Participation, Consultation, Partnership, Communications, Education, Awareness Raising, Public Campaigns, Behavior change, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Gender-sensitive indicators, Beneficiaries, Women groups, Gender results areas, Access and control over natural resources, Knowledge Generation and Exchange, Capacity Development, Urban Resilience, Municipal waste management, Green space, Knowledge Generation, Learning, Adaptive management, Theory of change

Type of Trust Fund	Project Duration (Months)
LDCF	48
GEF Project Grant: (a) 5,329,452.00	GEF Project Non-Grant: (b) 0.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)

506,298.00	0.00
Total GEF Financing: (a+b+c+d) 5,835,750.00	Total Co-financing 24,197,990.00
PPG Amount: (e) 150,000.00	PPG Agency Fee(s): (f) 14,250.00
PPG total amount: (e+f) 164,250.00	Total GEF Resources: (a+b+c+d+e+f) 6,000,000.00
Project Tags CBIT: No NGI: No SGP: No Innovation: No	

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. The explanation and justification of the project should be in section B "project description".(max. 250 words, approximately 1/2 page)

São Tomé and Principe (STP) is especially vulnerable to the effects of climate change in the form of increased precipitation, temperature and sea-level rise, affecting most assets along the coast and along the watercourses. The cities of Sao Tome and Santo António are particularly very vulnerable. This vulnerability recurrently affects the water security of 95,395 people (approximately 42,7% of the country's total population). The two cities' vulnerability is particularly due to, on one hand, climate-induced intense rainfall leading to flooding in the cities of Sao Tome and Santo António, because their drainage systems were not designed to accommodate such levels of rainfall. The intense rainfall also accelerates surface runoff, which pulls dirt into the drainage systems and further constrain their capacities. On the other hand, 50 percent (specifically 8 out of 16) water treatment and distribution systems, operated by the national Water and Energy Utility - EMAE, rely on surface water only and are often forced to stop operating when climate-induced intense rains significantly increase water turbidity (due to soil runoff). This leads to recurrent water supply interruptions for one third of the country's population. Women and girls disproportionally suffer from such interruptions, as they then have to walk long distances in search for water for domestic needs.

This project's objective is thus to increase (1) the resilience of urban areas and vulnerable communities to the impacts of climate change-driven floods and (2) water security in São Tome and Principe. It will apply Integrated Water Resources Management (IWRM) to foster an enabling environment for a climate-sensitive and integrated water-waste-drainage systems management, and enhance the climate resilience of both cities to flooding and urban water supply interruptions. In this regard, the project will improve upstream catchment management to reduce surface runoff, increase the urban drainage capacities to cope with the recurrent and above-normal surface flows, and enhance waste management that constrains drainage systems following intense rains.

To achieve the proposed objectives, the project will engage with a wide range of stakeholders, including the participation of policy makers to promote the necessary institutional and legal frameworks and strengthen the political relevance of the topics addressed. Additionally, the project will promote an active collaboration of government entities and technical staff from various sectors, at the local, regional and national level,

recognizing the multidimensional scope of the intervention. Also, there will be a direct engagement with civil society, private sector and the target population as key drivers of the change to be achieved by improved (integrated) management of watershed and water, waste and drainage infrastructures.

The Directorate of Environment and Climate Action will execute the project.

Indicative Project Overview

Project Objective

To increase (1) the resilience of urban areas and vulnerable communities to the impacts of climate change-driven floods and (2) water security in São Tome and Principe

Project Components

COMPONENT 1: Enabling Environment for climate-risk informed and resilient Integrated Water Resources Management

Component Type	Trust Fund
Technical Assistance	LDCF
GEF Project Financing ($)	Co-financing ($)
275,000.00	4,500,000.00

Outcome:

OUTCOME 1.

Effective Institutional framework for climate-resilient planning and development of the water (including drainage and sanitation) and waste sectors

Output:

1.1. Legal and institutional framework reviewed and operationalized towards a climate-resilient water, drainage and waste management

1.2. Advocacy, training and awareness raising for policy makers, technical staff and communities to support flood prevention and adaptation.

COMPONENT 1: Enabling Environment for climate-risk informed and resilient Integrated Water Resources Management

Component Type	Trust Fund
Investment	LDCF
GEF Project Financing ($)	Co-financing ($)
190,000.00	300,000.00

Outcome:

OUTCOME 2.

Effective operational capacity in place for climate-resilient water and waste sector coordination

Output:

2.1. National and regional Coordination system for data-driven planning, budgeting and implementation (Type: investment)

2.2 National and regional administration trained for operationalizing and upscaling integrated water resource management and resilient city planning. (Type: Technical Assistance)

COMPONENT 2: Resilience of urban drainage and water systems through climate adaptive approach, in São Tomé and Santo António

Component Type	Trust Fund
Investment	LDCF
GEF Project Financing ($)	Co-financing ($)
2,526,669.00	11,245,705.00

Outcome:

OUTCOME 3.

Improved management of watershed and drainages infrastructures for better response to climate driven floods

Output:

3.1. Improved watershed management as a Nature-Based solution for aquifer recharge to reduce rainwater runoffs in Agua Grande Watershed

3.2 Priority drainage works to reduce flood risks in the main urban areas, defined, and implemented.

COMPONENT 2: Resilience of urban drainage and water systems through climate adaptive approach, in São Tomé and Santo António

Component Type	Trust Fund
Investment	LDCF
GEF Project Financing ($)	Co-financing ($)
1,604,000.00	6,000,000.00

Outcome:

OUTCOME 4.

Reduce water quality risk through improved monitoring and effective waste collection

Output:

4.1. Control system put in place for monitoring of water quality in river basins of Água Grande and Santo António (Principe) (Type: Technical Assistance)

4.2. Implement a sustainable drainage waste management system in the city of São Tomé. (Type: Investment)

COMPONENT 3: Knowledge Management

Component Type	Trust Fund
Technical Assistance	LDCF
GEF Project Financing ($)	Co-financing ($)
390,000.00	880,000.00

Outcome:

OUTCOME 5.

Project knowledge is managed to foster learning, adaptive management, sustainability, and replication

Output:

5.1. Knowledge management and dissemination system, mainstreaming gender equality and PwD, for evidence-based decision-making and scaling up of best practices

M&E

Component Type	Trust Fund
Technical Assistance	LDCF
GEF Project Financing ($)	Co-financing ($)
90,000.00	120,000.00

Outcome:

COMPONENT 6:

Project results are monitored and evaluated to foster adaptive management and sustainability

Output:

6.1 Effective Monitoring and Evaluation Plan implemented

Component Balances

Project Components	GEF Project Financing ($)	Co-financing ($)

COMPONENT 1: Enabling Environment for climate-risk informed and resilient Integrated Water Resources Management	275,000.00	4,500,000.00
COMPONENT 1: Enabling Environment for climate-risk informed and resilient Integrated Water Resources Management	190,000.00	300,000.00
COMPONENT 2: Resilience of urban drainage and water systems through climate adaptive approach, in São Tomé and Santo António	2,526,669.00	11,245,705.00
COMPONENT 2: Resilience of urban drainage and water systems through climate adaptive approach, in São Tomé and Santo António	1,604,000.00	6,000,000.00
COMPONENT 3: Knowledge Management	390,000.00	880,000.00
M&E	90,000.00	120,000.00
Subtotal	**5,075,669.00**	**23,045,705.00**
Project Management Cost	253,783.00	1,152,285.00
Total Project Cost ($)	**5,329,452.00**	**24,197,990.00**

Please provide justification

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

Geographical and physical context

São Tomé and Príncipe is a Small Island Developing State (SIDS) in the Gulf of Guinea, off the western equatorial coast of Central Africa. The country, spanning 1,001 square kilometers, consists of two main islands, São Tomé and Príncipe, and several smaller islets. Divided into six administrative districts and the Autonomous Region of Principe, it has a hydrographic network of 223 rivers and streams (Figure 1[7]).

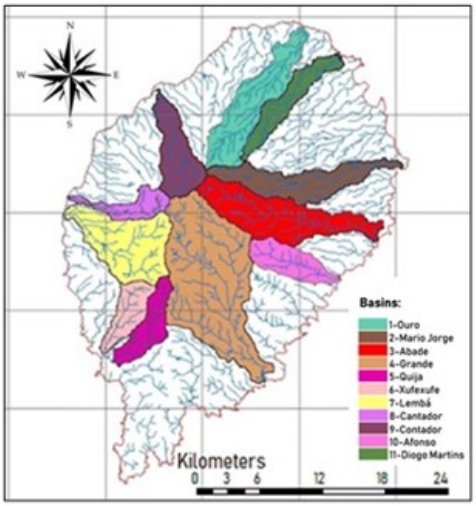

Figure 1 Main River basins and watershed in São Tomé

The interventions will take place in:

- **Água Grande district (6043' E; 0021' N), home to 38.9% of the total population and the upstream areas of the watersheds that feed into Água Grande. This watershed area of approximately 70 km2 can be seen in Figure 1, represented in white, Southeast River Diogo Martins (11) and North of River Mário Jorge (2);**

- **Autonomous Region of Principe (7025' 15'E; 1038'15' N) with a total of (147km2), notably the city of Santo Antonio and the upstream areas of River Papagaio (in red in Figure 2) - estimated total area of 20km2.**

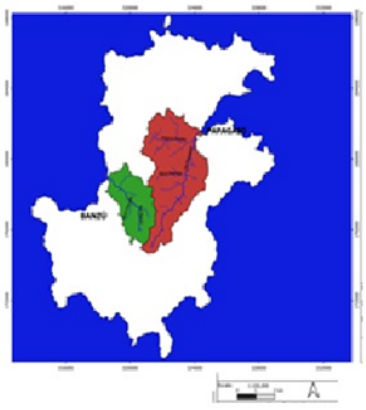

Figure 2. Main River basins in Príncipe

Climate baseline

São Tomé and Príncipe has a tropical climate with two seasons, a rainy period from September to May and a shorter dry period called 'Gravana' from June to August. The average sea level temperature is 25.6 ºC and the average air temperature is 26.2 ºC [7], with slight variations with altitude and time of year. Rainfall varies significantly with altitude, especially between the North and South, from 1,000 mm to 7,000 mm due to the orographic distribution of the islands. The country is an absolute greenhouse gas sink but has committed to mitigation and adaptation under the Paris Agreement, including reducing vulnerability, enhancing capacities, and improving monitoring and data collection systems.

Observed and Projected Climate change

São Tomé and Príncipe is grappling with the profound impacts of climate change. The observed and projects main hazards and climate trends in São Tomé and Principe, as identified by the World Bank Climate Risk Profile[3], include temperature increase and heatwaves, variation in precipitation and increased extreme weather events, and sea level rise.

Temperature Increase and Heatwaves

Data from the National Institute of Meteorology and Geophysics (INMG) indicates an average temperature increase of approximately 0.6°C, between the years 1960 and 2016. This warming trend, corroborated by satellite data from NASA's Earth Observing System Data and Information System (EOSDIS), is reflected in rising sea surface temperatures, affecting marine life and coral reefs. Since the 1970s, average temperatures have increased by about 0.67°C. This upward trend has accelerated strongly since the early 2000s. The 2010 decade was the warmest on the island since the 1970s (Figure 3[4]).

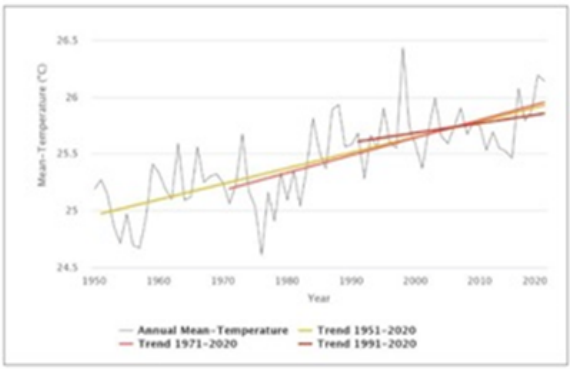

Figure 3. Mean temperature annual trends with significance of trends per decade.

Climate models project **a continued rise in temperatures in São Tomé and Príncipe. Projections for the period 2041- 2070 foresee a change in temperature in both islands reach values of about 2.5 ° C to 3 ° C, both in the rainy season and in the dry season (Figure 4[5]). This temperature rise can contribute to more frequent and intense heatwaves, with implications for agriculture, human health, and energy demand. Elevated temperatures may exacerbate water scarcity, affecting both ecosystems and human populations.**

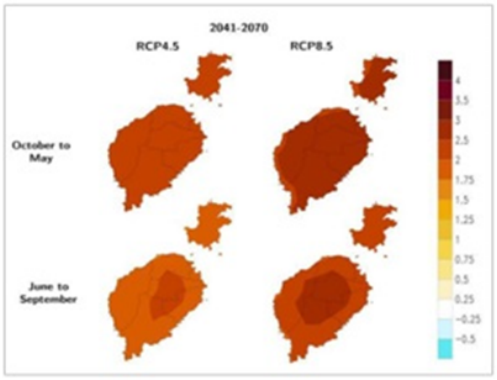

Figure 4. Temperature change October- May and June- September, projected for the period 2041-2070 under RCP4.5 and RCP8.5

Variation is Precipitation and Increased Extreme Weather Events

INMG's meteorological records reveal alterations in precipitation patterns, with some regions experiencing a 15% increase in rainfall over the last three decades (Figure 5[6]).

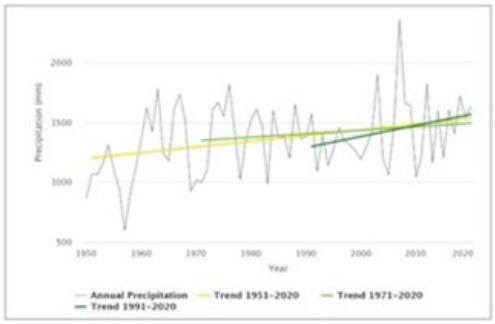

Figure 5. Precipitation annual trends with significance of trend per decade

The identified patterns indicate that precipitation increase seems to be related to more intense rainfall events. This has led to potential flooding, while other areas face a 20% decrease in precipitation, exacerbating the risk of drought and water scarcity. These local observations align with broader global trends outlined in reports from the Intergovernmental Panel on Climate Change (IPCC).

Climate models suggest an escalation in the frequency and intensity of extreme weather events in the region. São Tomé and Príncipe may experience more frequent tropical cyclones, heavy rainfall, and storms, but also more prolonged periods without rain enhancing the potential for drought. These events can lead to flash floods, landslides, and extensive damage to infrastructure. Coastal areas and floodplains are particularly susceptible to the impacts of these events, posing risks to human settlements, agriculture, and critical facilities.

The index that measures the extent of consecutive dry days (CDD), for the 1971-2000 reference period, shows a declining trend, in less than 20 days in the year in the Principe Island, while in São Tomé, periods the CDD can reach up to 50 days without precipitation, in the central areas of the Island. Projection for the future period of 2041-2070, in different scenarios, foresee an increase on consecutive dray days that

can reach up to 110 days [7] **under RCP8.5 scenario, enhancing the drought vulnerability of the country.**

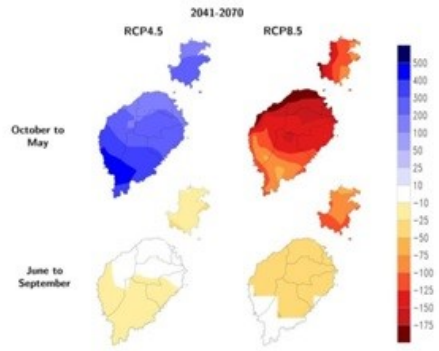

Figure 6. Change in cumulative precipitation (mm) projected for 2041-2070 in the RCP4.5 and RCP8.5

The same IPCC projections for the RCP4.5 scenario indicate that the precipitation increases from October to May and slightly drier and/or normal conditions in the other months of the year. The RCP8.5 scenario the projections indicate otherwise, with a precipitation reduction occurring in both the rainy and dry periods, although monthly changes indicate that December and January present an increase in precipitation (Figure 6).

Furthermore, relevant forecasting models project increased precipitation until 2100, compared to the 1995-2014 baseline. The models also confirm an increased number of dry days during most months of the year but intense rainfall during the rainy season (Figure 7).

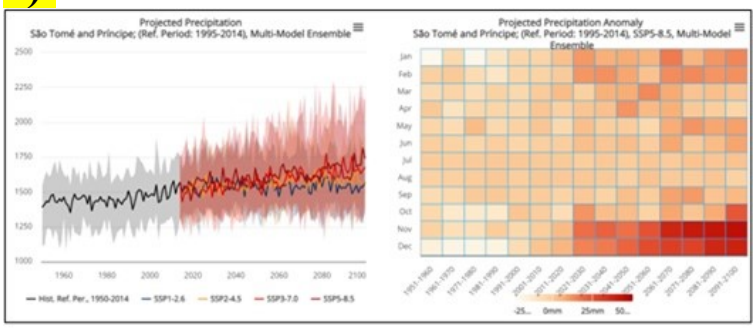

Figure7. Projected precipitation and anomaly[8]

Sea-Level Rise

São Tomé and Príncipe is experiencing continuous sea level rise since 1993. The coastline is affected by the effects of tides and by sea level rise, varying from 10 m to 70 mm, and affecting almost 1,200 inhabitants (Figure 8[9]).

Relative to 1995–2014, the likely global mean sea level rise under the SSP1-1.9 GHG emissions scenario is 0.15–0.23 m by 2050 and 0.28–0.55 m by 2100; while for the SSP5-8.5 GHG emissions scenario it is 0.20–0.29 m by 2050 and 0.63–1.01 m by 2100[10].

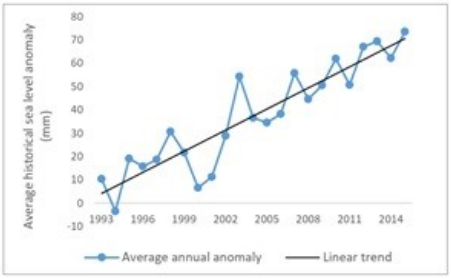

Figure 8. Historical annual sea level for coastal São Tomé and Principe

This poses a significant threat to low-lying coastal areas in São Tomé and Principe, leading to saltwater intrusion into freshwater sources, increased vulnerability to storm surges, intensified floods and accelerated coastal erosion. The resulting impacts can disrupt livelihoods, damage infrastructure, and force communities to relocate.

Impacts of Climate Change

Climate trends in São Tomé and Principe contribute to increase the country's vulnerabilities that impact across society and the natural environment, notably regarding:

- Increased extreme events of rainfall, exacerbates the frequency of coastal and river flash floods, with high economic, social and environmental impacts;
- Variations of precipitation with longer periods of drought and more frequent intense rainfall, associated with landslide and soil runoff into rivers and streams, increase water insecurity by reducing availability and quality of water resources;

These key impacts are further detailed below:

Figure 9. In blue the present-day 50-year return period flood event in the city of São Tomé (2020 Climate Conditions), World Bank

Exposure to Floods

According to the National Strategy for Disaster Risk Management (2016), São Tomé e Príncipe is particularly vulnerable to coastal and river flash floods following heavy rainfall. Floods are caused by the rapid runoff of water in the upstream steep terrain that characterized the river basins. The rapid saturation of water in their very thin and increasingly dry soils, associated with deforestation, drive large volumes of water into downstream areas where most of the population resides. To cause a flood, it only takes about 10mm of rain in 24 hours. The recession of the associated hydrographs is also very rapid, the river basins have low water retention (PIGIRH, 2021). Figure 9 displays the extension of 50-year return period flood event in the city of São Tomé.

The local economy is heavily exposed to floods. On a yearly average, the areas that are affected by floods produce about 1.5% of the national GDP, which corresponds to about 8,4 million USD per year in 2020. This is forecasted to increase to 2.2% of national GDP by 2050, representing an annual loss of 12,1 million USD[11]

Figure 10. Flooded City of São Tomé. Dec. 2021

The impact of flood is especially severe in highly populated cities in the coastal zone due to urbanization and the cumulative effect of water run off along the watersheds. This is especially the case of the capital, São Tomé, home to 38,5% of the country's population, where several areas have already been identified as particularly vulnerable to flood events as illustrated in figure 9[12]. Santo António, the main city of the Autonomous Region of Principe, with 35% of the region's population, is also particularly vulnerable to floods events due to its costal location at the month of Papagaio river[13].

Figure 11. Agua Grande river, just before reaching the ocean in the city of São Tomé, blocked by waste and forest material dragged by the floods. Dec. 2021

Despite the country's limited capacity to monitor climate events, from 2001 to 2016 there were at least 19 recorded extremes events of floods and storms that destroyed homes and caused loss of lives[14]. Highly populated urban areas have been especially affected. The torrential rains and floods of late 2021 and early 2022, affected 219.68 people, nearly 100% of the total population[15], causing the loss of human life, destruction of livelihoods, power outages, fuel shortages for several days and bridges were wrecked or severely weakened (Figures 9 and 10). The impacts were especially severe in the districts of Água Grande, home to 38.9% of the country's population, Lobata and Lembá, with 60% of the total population being highly affected with disruption of the economic activity. Crops, supply roads, economic infrastructure such as markets and fishing were severely damaged. The sudden and significant rise in water levels associated with landslides heavily affected coastal populations and even urban dwellers, causing huge material damage, the loss of essential household items and protective equipment, as well the destruction of public infrastructure, including a health center, roads and water supply systems that service rural communities[16]. Other particularly severe river floods events have also been recorded in the Island of Principe in 2016 and May 2022 (Figures 11 and 12).

Figure 12. River Papagaio in Santo Antonio during floods in Principe, 2016

The above-mentioned precipitation patterns, showing a 15% increase in rainfall over the last three decades, in some regions, associated with more intense rainfall events (figures 5 and 6) indicate that such events are becoming more frequent. The changing precipitation patterns with longer periods of consecutive dry days followed by intense period of rainfall, combined with the potential for increased tropical storms, heightens the risk of flooding in São Tomé and Príncipe, especially in highly populated areas where drainage systems were built to services significantly smaller population densities and less intense rainfall events.

Figure 13. Floods in Principe destroy roads, 2022

Also, the escalation in the frequency and intensity of extreme weather events in the region forecasted by climate models are expected to exacerbate these extreme events, including floods frequently along the coasts of the islands and disturb many towns and communities, as well as contributing to soil erosion, landslides, increasing the risk of waterborne diseases and decreasing crop production[17].

The number of months with above-average precipitation has been increasing since 1981, reaching peaks of up to 9 months per year with exceeded average precipitation (Figure 13). This was the case of 2021

when a state of disaster was declared by the Government due to heavy flooding[18] affecting about 60% of capital city's population[19].

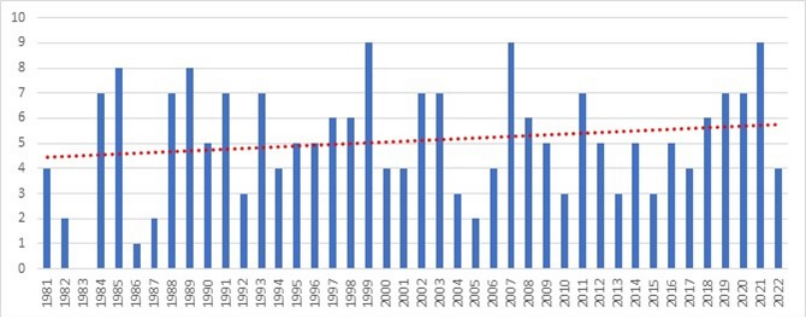

Figure 14. Number of months with above-average rainfall in a year[20][1]

Under the scenario RCP4.5., future climate, 2041- 2070, shows an increase of intense precipitations in the whole area of the country, based on the reference period of 1971-2000, as determined by the number of days in the year with precipitation above 50 mm (R50 mm) which represents extreme events of rain with potential to cause damage. However, under conditions of higher concentrations of greenhouse gases in the RCP8.5 scenario, there is a tendency for rainfall to decrease in Príncipe and in the northern region of Sao Tome Island, and a tendency for increased precipitation in the south-southwest region of Sao Tomé (Figure 14)[21].

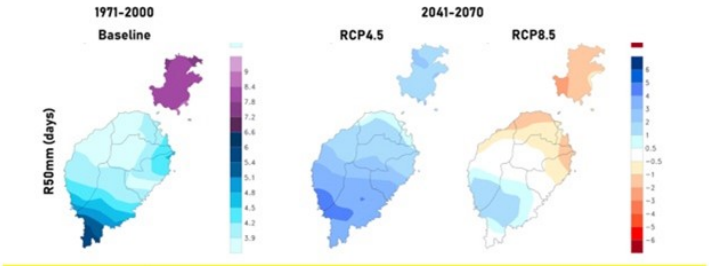

Figure 15. Baseline and future climate under RCP4.5 and RCP 8.5 scenarios for the number of days in the year with precipitation above 50 mm (R50 mm).

The ongoing **urbanization** and land use changes in São Tomé and Príncipe can exacerbate flood risks. As urban areas expand, impermeable surfaces such as concrete and asphalt increase, reducing natural drainage. Often, new construction works end up damaging the existing drainage systems, due to a lack of accurate schematic for underground networks.

This phenomenon, known as urban sprawl, can intensify the impacts of heavy rainfall, leading to more rapid runoff and flooding in urbanized areas. Effective urban planning and sustainable land use practices designed with necessary climate adaptation needs are crucial for minimizing these risks.

Water Resources

São Tomé and Príncipe's dependence on surface and ground water sources, fueled by rainfall, increases its vulnerability to climate change. The National Water and Energy Utility (EMAE) faces limited capacity to record water volumes, leading to increased variation in water flows and precipitation patterns.

The change in rainfall pattern result on shortening of rainy season and extension of dry season from 3 to 5 months depending on the year[22]. Taking into consideration that STP is 100% dependent on rainfall for its water resources, such climate driven variation in precipitation increases water insecurity, degrading the natural ecosystems, decreasing soil permeability and aquifer recharge.

Furthermore, eight of the total 16 water supply systems operated by EMAE – which supply one third of the country's population use surface water as their only source. Increased water turbidity raises treatment costs and often these systems are forced to stop operating when turbidity reach especially high levels, rendering them incapable of performing an adequate treatment of raw water before distribution.

Water security is also affected by lack of a regular monitoring of the quality of water resources in the environment (river, lakes, springs, or groundwater), as well as the country's limited capacity to ensure adequate wastewater and solid waste collection and treatment that directly contribute to pollution events[2][23].

Problem Statement & and Preferred Solution

Climate change in São Tomé and Principe (STP) is causing increased precipitation, temperature, and sea-level rise, affecting coastal assets and watercourses. Sao Tome and Santo António, the cities with 42.7% of the total population, are particularly vulnerable due to intense rainfall, surface runoff, and limited water treatment systems. These systems often stop operating due to increased water turbidity, causing recurrent water supply interruptions for one-third of the population.

Women and girls disproportionally suffer from this situation, as they have to walk long distances to fetch water for the domestic needs.

The *proposed project aims* to increase (1) the resilience of urban areas and vulnerable communities to the impacts of climate change driven floods and (2) water security in São Tome and Principe. To achieve this, the project will i) promote the operationalization of integrated water resources management (IWRM) approaches at the national scale (223.648 inhabitants, 2023), ii) strengthen the country's adaptative capacity to floods and increase water security by directly intervening in the rural areas upstream from the Agua Grande District (with an estimated total areas of 70 km2 and from the city of Santo António in Principe, along the Papagaio river watershed (approximately 20km2), and iii) increase the resilience of drainage infrastructures and its management capacity, while reducing water quality risks, in the highly populated areas of the Água Grande District (86.054 inhabitants, 2023) and São António (2.576 inhabitants , 2012) (See annex C. Project Location). Therefore, the project's contribution to enhancing the environmental, social and economic opportunities will improve the baseline conditions for increasing the overall Human Development Index (HDI) of São Tomé and Principe.

It will do so, by enhancing the enabling environment for climate risk informed and resilient IWRM (Component 1). São Tomé and Príncipe's has taken relevant steps towards better adaptation of the water sector to climate change. This includes a commitment towards IWRM, reflected in the National Participatory Water and Sanitation Strategy (ENPAS, 2012), enactment of the National Water Law (2018), the preparation of the IWRM Implementation Plan (PIGIRH, 2021) and the elaboration of the Management Plans for some of the main river basins (PGIBH,2021). Nonetheless, the country's limited technical and operation capacity has undermined its ability to implement several of the proposed actions foreseen in some of these documents.

In order to tackle this challenge, and In line with the actions defined in the PIGIRH for STP[22] strategic area 4 and the ENPASA activity 3.1, the project will contribute towards i) an effective Institutional framework for climate-resilient planning and development of the water (including drainage and sanitation) and waste sectors (Outcome 1), as well as ii) an operational capacity to implement the required cross-sector approach (recognizing the impact of the water-sanitation-waste nexus in IWRM), based on improved data on water resources (with a focus on upstream rural areas of the Agua Grande District), that will enable a technically and financially sustainable sector management (Outcome 2), in line with measure 1 of the TNA/TAP[23].

Additionally, the project will strengthen the resilience of urban drainage and water systems through climate adaptive approach, in the cities of São Tomé and Santo António (Component 2). This will entail:

i) Improving the management of upstream watershed and downstream water and wastewater drainage infrastructures, for better response to climate driven floods (Outcome 3). Under this outcome, the project intervention in upstream areas shall improve monitoring of water resources and tackle the linkage between deforestation[24] and soil erosion, leading to the concentration of large amounts of sediment in many river basins. The reduction of forest area, in association with other natural phenomena exacerbated by climate change, such as intense rainfall, result in increased erosion and flooding along river basins, reduced river flow, degradation of the quantity (river flows and aquafers recharge) and quality of water for industrial, domestic and agriculture purposes. Hence, the project will favor the implementation of Nature Based Solutions (NBS) In downstream areas the project will focus on addressing the limitation imposed by the current drainage systems, notably in the city of São Tomé, that was designed and built for smaller population and less intense rainfall events.

ii) Reducing water quality risk through improved monitoring and more effective solid waste management (SWM) in the city of S. Tomé (Outcome 4). Under this outcome the project will focus on the consequences of flood events regarding the deterioration of water quality in freshwater (river, lakes, springs, or groundwater) but also in the compounding effect of intense rainfall moving solid waste in drainage systems and subsequently making floods worse.

Alternative solutions have been explored for increasing the resilience of urban drainage and water systems, such as the construction of water retention dams, or grey infrastructure to divert the excess flow of water. However, the following key factors were in favor of the retained option:

- there is a need for an intervention that combines *action in upstream areas to reduce water flows*, recharge aquifers, reduces the burden on downstream drainage systems, and minimize adverse effects that can result from a water retention dam collapse.
- Favoring nature-based solutions, rather than grey infrastructures, in the upstream intervention. Extensive literature identifies NBS, adapted to the local context, as a viable alternative that can contribute to mutual, synergistic progress on sustainable development, climate change, and biodiversity[25]. In the specific case of São Tomé and Principe, this choice is based on:

- Technically adequacy for reducing water flow and soil degradation and run off;
- Lower environmental impacts, an aspect especially relevant as the intervention area in São Tomé is in a Natural Park and in Principe is in a UNESCO World Biosphere Reserve;
- Lower cost and technical complexity, adapted to the context of the country;
- Potential for easy replicability and community involvement and jobs creations.

Furthermore, to foster learning, adaptive management, sustainability and replication (integrating a gender perspective), the **project knowledge will be managed, and project results monitored and evaluated**, through a knowledge management and dissemination system **(Component 3)**, which will contribute to increase the awareness and capacity of citizens to participate in the implementation of climate adaptive approaches, while also promoting inclusion, gender equality and women's empowerment.

Barriers to Preferred Solution

1) Limited institutional framework and capacity to develop and operationalize IWRM and resilient city planning (Institutional Barrier)

Over the last decade the country has made relevant progress in the institutional and legal framework in wider water sector. This includes the capacity strengthening of leading Government institutions such as the Directorate of Environment and Climate Action (responsible for solid and liquid waste and environmental sanitation) and the General Directorate for Natural Resources and Energy (responsible for water resources), as well as the preparation of policies and planning tools, notably:

- National Land Use Plan (PNOT, 2019)
- - Master Plan for Água Grande District (PDAG, 2019)
- - Master Plan for the Autonomous Region of Principe (PDRAP, 2019)
- - National Participatory Water and Sanitation Strategy (EPAS, 2021)
- - Master Plan for Integrated management of selected water basins (PGIBH,2021), including Manuel Jorge, Io Grande, Provaz, Abade,
- Papagaio e Banzu (in RAP)
- - Integrated Water Resources Management Implementation Plan (PIGIRH, 2021)
- - National Environmental Sanitation Policy (PNSA, 2018)
- - National Environmental Sanitation Strategy and Action plan (ENPASA, 2022-2030), serving as the implementation tool for PNSA, 2018
- - National Action Plan for Integrated Solid Waste management (PAGIRSU, 2018-2023)

- **The adoption of climate change adaptation measures to enhance water security faces several limitations, including lack of interdepartmental cooperation, qualified staff, and insufficient information on water resources. These issues hinder the operationalization of integrated approaches to water resources management, which can contribute to sustainable climate change adaptation and strengthen the country's resilience to climate events.**

2) Limited capacity to intervene in upstream watershed areas to reduce flood risks (Environmental Barrier)

The lack of watershed management practices in São Tomé and Principe, particularly in the Água Grande District, contributes to aquifer recharge, water runoff, and flood risk. Deforestation, particularly in upstream areas, is a significant environmental challenge, causing biodiversity loss, land degradation, and soil erosion. The absence of a management plan limits upstream interventions due to a lack of information and a strategic approach. This directly impacts the city's climate vulnerability to flood events, affecting governance, economic, and social consequences.

3) Current drainage infrastructure and management capacity are insufficient for dealing with flood events (Technological Barrier)

The lack of sufficient drainage infrastructure and flood management capacity in São Tomé, a country with a history of flooding, poses a significant barrier to implementing climate change adaptation actions. While priority intervention areas have been identified to mitigate flood impacts, governmental authorities have limited capacity to conduct technical studies and construct infrastructures for urban areas. The city's coastal road rehabilitation works, planned for 2024-2025, aim to improve drainage discharge areas into the ocean, but there is no capacity to improve drainage infrastructure in inland city areas, making the population, environment, and economic activity vulnerable to climate change.

4) Limited capacity to monitor water resources quality (Technological and Institutional Barrier)

The country's vulnerability to climate change is significantly increased due to the inability to regularly monitor water resources' quality. This hampers governmental organizations' ability to plan sustainable

water use, leading to health issues and uncontrolled pollution events. The National Water Information System, established by law, should collect and share information about water resources for planning and management, but it has not yet been operationalized.

5) Lack of adequate waste management leads to the contamination of water resources and blocking of drainage systems (Technological and Economic Barrier)

The city of Sao Tomé faces significant risks due to limited capacity for solid waste collection, safe disposal, and treatment, particularly in highly populated areas. This poses a risk for water resource contamination, environmental pollution, and blockage of the city's drainage system during extreme rainfall and floods. The lack of monitoring of water quality exacerbates these contamination events.

6) Limited awareness and capacity of citizens to participate in the implementation of adaptive approaches that contribute to a more resilient community (Social Barrier)

Despite certain a degree of awareness about climate change issues, most of the citizenship lack deeper understanding on co-relations with other aspects of their lives, such as health, waste management, economy, and specially, the knowledge and capacity to act upon climate change impacts, in order to reduce vulnerability, increase resilience or mitigate the climate change impacts in their lives.

Also, although the effects are already affecting many activities the population is yet not mobilized to see itself as an agent for adapting to climate change, and to develop individual and collective changes of behavior or risk management strategies such as diversification of livelihoods.

Sector Stakeholders

The Directorate of Environment and Climate Action (DAAC), under the Ministry of Environment is responsible for defining and participating in the execution of State policy in matters of the environment and climate action. DAAC will be the National Implementation Entity. The project will also engage directly with other partners, consulted during PIF formulation, that will contribute to a sound project delivery, including:

- - The **Ministry of Environment, the Ministry of Infrastructure and Natural Resources and the Ministry of Finances** hold direct technical and financial responsibilities regarding climate action, management of natural resources (including water and forests), and infrastructures such as drainage systems. During project implementation these entities will be a direct

engagement to raise awareness and strengthen political support for the implementation of actions and mobilization of resources contributing for an IWRM (Output 1.1).

- - The **General Directorate of Natural Resources and Energy (DGRNE)**, under the Ministry of Infrastructure and Natural Resources, is the for the natural resources (including water) and energy. DGRNE will play an active role in the review and operationalization of the legal and institutional framework towards a better integration of water, drainage, and waste management (Output 1.1) and the preparation of the Watershed Management Plans for Agua Grande (Output 2.1).
- - The **National Water Institute (INA)** under the Ministry of Infrastructure and Natural Resources is assigned to develop water resources policy, notably IWRM. INA will play an active role in the review and operationalization of the legal and institutional framework towards a better integration of water, drainage, and waste management (Output 1.1) and the preparation of the Watershed Management Plans for Agua Grande (Output 2.1).
- - The **National Roads Institute (INAE)** is responsible for developing the construction and maintenance policy for roads and drainage. INAE will play an active role in the definition and implementation of priority drainage works in the main urban areas (Output 3.2).
- The **Directorate of Forests and Biodiversity (DFB)**, under the Ministry of Agriculture, Rural Development and Fisheries ais responsible for forestry and biodiversity policies and for the coordination of the activities of the Obô Natural Park of São Tomé (PNOST). DFB will play an active role in defining and implementing NBS to promote aquifer recharge and reduce run-off in Agua Grande Watershed (Output 3.1).
- - The **Regional Secretariat for Infrastructure, Public Works and Territorial Planning (SRIOOT)**, under the supervision of the Regional Government is responsible for the development and implementation of infrastructure, public works and territorial planning policies. SRIOOT will play an active role in defining and implementing NBS to promote aquifer recharge and reduce run-off in Agua Grande Watershed (Output 3.1).
- - The **Regional Directorate for the Environment and Nature Conservation (DRACN)**, under the Regional Government of Príncipe responsible for environmental and nature conservation policies. DRACN will play an active role in supporting DGAC and LNESTP in the operationalization of water quality monitoring plan in river basins of Santo António (Output 4.1).
- - The **Água Grande District Council (CDAG)** is the local governmental body with the attribution to implement economic, social, and environmental policies in the district, notably on waste management and sanitation. CDAG will play an active role in the implement a sustainable waste management system in the city of São Tomé (Output 4.2) and will participate in the preparation of the structuring plan of the priority areas targeted for drainage works intervention in the city of São Tomé (Outputs 3.2).
- - The **Civil Engineering Laboratory of São Tomé and Príncipe (LECSTP)** is responsible for overseeing infrastructure, natural resources and civil construction policies and quality control of materials to be applied in construction works. LECSTP will play an active role in setting up and operating a control system for monitoring of water quality in river basins of Água Grande and Santo António (Output 4.1) and participating in the technical studies for the construction of a Nature based wastewater treatment facility in the city of São Tomé.

- The **Water and Electricity Company (EMAE)** is the public utility responsible for ensuring access to water and energy in the country. EMAE will play an active role in installing Water meter in water springs (Output 2.1).
- **-** The **National Committee for Prevention and Response to Disasters (CONPREC)** under the Ministry of Defense, is the high-level council charged with coordinating disaster risk management. CONPREC will participate in the definition of the priority area for drainages works (Output 3.2).
- **-** The **National Committee for Climate Change (CNMC)** is an inter-ministerial body with the remit of a National Designated Authority, responsible for the coordination, monitoring and evaluation of the different activities (programs and projects) to be developed within the context of the United Nations Framework Convention on Climate Change (UNFCCC) implementation. CNMC will play an active role in development and dissemination of targeted contents and dissemination initiatives for key stakeholders - policy makers, technical staff and citizens, promoting awareness and actions for adaption to climate change (Output 5.1).
- **-** The **National Institute for the Promotion of Gender Equality and Equity (INPG)**, under the Ministry of Health and Women's Rights of São Tomé and Príncipe is responsible for the promotion of gender equality and equity. INPG will contribute to the Legal and institutional framework reviewed and operationalized (Output 1.1), the Advocacy, training and awareness raising activities (Output 1.2), the training of national and regional administration on IWRM and climate-resilient city planning (Output 2.2), as well as the Knowledge management and dissemination activities (Output 6.1).
- **-** The **Federation of Non-Governmental Organizations of São Tomé and Príncipe (FONG-STP)**, represents the affiliated NGOs. FONG will participate in the dissemination initiatives for key stakeholders, promoting awareness and actions for adaption to climate change (Output 5.1).
- **- Civil Society Organization** (CSO) play a key role in areas such as forest conservation, water quality, waste management, and support to vulnerable groups **and communities**. CSO along with local communities will be involved in the delivery of specific tasks such as defining and implementing NBS to promote aquifer recharge and reduce run-off in Agua Grande Watershed (Output 3.1) engagement with beneficiaries and vulnerable groups impacted by drainage works

intervention in the city of São Tomé (Outputs 3.2) and the implementation of a sustainable waste management system in the city of São Tomé (Output 4.2).

- - The **UN-Habitat** has carried out several initiatives to support city planning including the identification of priority intervention areas to contain the impact of floods in the city of São Tomé (CityRAP, 2017). Un-Habitat will participate in definition of priority drainage works in the main urban areas (Output 3.2)

Other institutions will also be called in to participate in activities, including in training and capacity building sessions.

Relevant initiatives for synergies and complementarity

The proposed projects is aligned and will contribute to the operationalization of key national priorities, policies and plans:

- **National Sustainable Development Plan for 2020-2024 (PNDS, 2019)**
- **National Land Use Plan (PNOT,2019)**
- **Master Plan for Água Grande District (PDAG, 2019)**
- **Master Plan for the Autonomous Region of Principe (PDRAP, 2019)**
- **National Participatory Water and Sanitation Strategy (EPAS, 2012)**
- **Integrated Water Resources Management Implementation Plan (PIGIRH, 2021)**
- **National Environmental Sanitation Strategy and Action Plan for 2022-2030 (ENPASA, 2019), serving as the implementation tool for National Environmental Sanitation Policy (PNSA, 2018)**
- **National Action Plan for Integrated Solid Waste management for 2018-2023 (PAGIRSU,2018)**

The project will build on the lessons learned from past (baseline projects) and promote synergies with ongoing investments, including:

Relevant project (Title, funder, value, implementation period, executing entity)	**Summary of project**	**Alignment with proposed project**
West African Coastal Zone Resilience Investment Project (WACA ResIP - P162337)	The West African Coastal Resilience Investment Project (WACA ResIP) is a regional initiative aiming to enhance coastal communities' resilience by enhancing their	This project includes three components (2, 3 and 4), respectively: strengthening the institutional and political framework, social and physical investments

Location: 15 Communities in São Tomé and Príncipe Funding: World Bank, the Global Environment Facility (GEF), the Nordic Development Fund (NDF) and contributions from governments. Budget: USD 15 million dollars Implementation period: 2018-2024 Executing entity: GoSTP, AFAP	absorption, adaptation, and transformation capacities. Covering six countries, it follows a participatory approach, focusing on climate change adaptation in the coastal zone, policies, laws, and institutional development.	(adaptation works and housing in safe expansion areas) and support for the Project Management Unit (UGP). WACA ResIP component 1 is implemented at the regional level for the WACA BAR. The proposed project is aligned with the focus on the design and implementation of climate adaptation actions, as well as the strengthening of the institutional framework for climate action.
STP Coastal Areas Resilience and Sustainable Tourism Project (WACA+, P180982) Location: São Tomé and Príncipe Funding: World Bank Budget: USD 24 million dollars Implementation period: 2024-2028 Executing entity: Ministry of Infrastructure and Natural Resource, GoSTP, AFAP	The project aims to enhance coastal community resilience and sustainable tourism in São Tomé e Príncipe by strengthening the policy and institutional framework for coastal adaptation and enhancing national investments, building on lessons from the West Africa Coastal Areas Resilience Investment Project.	Both projects contribute to increase the institutional and infrastructural capacity of STP to adapt to climate change impacts. As with the proposed GEF 8 project, WACA+ also aims at increasing the resilience of targeted coastal areas by financing physical and social investments in select vulnerable coastal communities, by supporting site-specific grey, green, and/or hybrid physical rehabilitation and infrastructure investments for erosion and flood control.
Requalification of the coastal Road (Marginal) of São Tomé Location: Água Grande Funding: European Investment Bank and Invest International (II), Government of São Tomé and Budget: Lot1: €12,647,815 (Praia Lagarto Bay) Lot 2: €18,313,414 (Ana Chaves Bay) Lot 3: 7,478,805 (Coast of Pantufo) Executing entity: National Roads Institute Implementation period: 2023-2026	The project aims to enhance the reliability, quality, safety, and resilience of the coastal road as a transport and protection corridor, enhancing safety conditions for road users, including motorized and non-motorized vehicles, and contributing to the island's road network and tourist development.	The proposed project will contribute to improve the drainage systems in inland areas that discharge along the coastal road (Marginal) being rehabilitated by the EIB funded Project. This will contribute to reduce the risk of degradation or destruction of the Marginal by reducing the rain flows from upstream along the natural and constructed drainage channels, as well as the risk of clogging due to excessive (natural and urban) waste.
Reduce the vulnerability of São Tomé and Príncipe to the impacts of Climate Change, strengthening the country's capacity to Implement an Integrated Adaptation Planning approach (NAP) Location: São Tomé and Príncipe Funder: GCF		The proposed project will similarly focus on adaptation to climate change and includes a relevant component focused on strengthening the institutional and legal framework (as with NAP, point 1), but with a specific focus on the water sector promoting a IWRM approach. As with NAP, the proposed action will promote technical and scientific evidence-based solutions for climate

Budget: 2,963,978 USD Implementation period: 2022- 2026 Execution entity: Directorate of Environment and Climate Action (Ministry of Environment) Implementing Partner: UNEP		adaptation, in this case focused on reforestation and aquifer recharge, flood and waste management.
Water Supply Project Location: São Tomé (capital city) Funder: European Investment Bank Budget: 15 million USD Implementation period: 2022 – end date to be defined. Implementing Partner: EMAE	The project consists of priority investments aimed at rehabilitating and increasing the water supply and distribution infrastructure and services in Sao Tome city and surrounding areas. These Investments are mainly focused on the extension and rehabilitation of the water transport and distribution system in the capital and surrounding areas to reduce water losses and consequently increase the volume supplied, as well as expansion of an ETA in Rio de Ouro to increase production. The project aims to support the inclusive socio-economic development of São Tomé through improving and increasing access to drinking water (in terms of coverage and quality of services) increasing the city's resilience to climate change and scarcity events.	Both projects will contribute to increase water security in São Tomé, by improving the capacity to mobilize, distribute and manage water resources, hence reducing the vulnerability to climate change impacts.
Technology Needs Assessment (TNA) Location: São Tomé and Príncipe Funder: GEF Implementation period: 2021-2023 Implementing Partner: UNEP	The UN Environment's Technology Needs Assessments (TNA) Project assists developing countries in determining their technology priorities for mitigating and adapting to climate change. Funded by the Global Environment Facility, the project collaborates with the UNFCCC Technology Mechanism and the Climate Technology Centre and Network. Key priority sectors include agroforestry, water management, energy mitigation, and transport.	The proposed project will promote the implementation of several priority action for technology transfer in the water sector identified in TNA. See Output 2.1 and Output 4.1)
Technical Assistance to the Climate Action Enhancement Package (CAEP) Location: São Tomé and Príncipe Funder: NDC Partnership Implementation period: 2021 Implementation period: UNEP DTU	The Climate Enhancement Package (CAEP) aids developing countries in enhancing their National Development Goals (NDCs) and expediting their implementation, aiming to promote resilient, sustainable, and low-emission development, aligning with the Paris Agreement's goals.	The proposed project will promote the implementation of several priority action for technology transfer in the water sector identified in CAET. See Output 3.1
Sectoral Reform Contract Location: São Tomé and Príncipe	The EU and São Tomé and Príncipe signed a Sectoral Reform Contract, aiming to provide legal instruments, strengthen the	The proposed project will build on the changes and improvement achieved notably concerning i) the legal

Funding: European Union Budget: EUR 22,300,000 Implementation period: 2015- 2022 Execution entity: Ministry of Infrastructures and Natural Resources and Ministry of Planning and Finance	institutional framework, ensure gender equality, improve water quality, and increase access to basic sanitation.	instruments for the water and sanitation sector; ii) the Restructure and strengthen the existing institutional framework, and the iii) promoting of equity and equality between women and men in the integrated management of water resources
Improving Biodiversity Conservation and Sustainable Management of Land and Natural Resources Location: São Tomé and Príncipe Funding: GEF/UNDP Budget: USD 4.282.559 Implementation period: 2022 – 2026 Execution entity: Directorate of Environment and Climate Action – Ministry of the Environment	The project aims to protect terrestrial biodiversity and ecosystem services globally by strengthening national capacities for biodiversity and natural resource management, integrated land use planning, environmental law enforcement, and improving protected areas and sustainable charcoal production through four components: improving systems, monitoring and financing, and knowledge management.	The proposed project will implement reforestation measure aimed at contributing to aquifer recharge and reducing water runoff and soil erosion. Hence, it will be possible to establish synergies and complementary to leverage the impacts of both actions.
REHDES |Reforço Holístico para o Desenvolvimento Sustentável Funder: Água Grande Funding: EU Budget: EUR 2.000.000 Period: 2020-2022 Implementing entity: Água Grande District Council (CDAG)	The Ribera Consortium is collaborating on a waste management system in São Tomé and Príncipe's capital district. The project aims to improve environmental policies, prevent health issues from uncontrolled landfills, and combat poverty by creating green jobs and supporting the circular economy. The consortium will work with the Água Grande District Council and Mosteiros Municipal Council.	The proposed project will build upon the progresses achieved by this previous initiative, and during PPG phase a detailed assessment of this initiative will be carried out, along with the CDAG, to incorporate the lessons learned.

[1] ***Adapted from AFONSO, 2016,*** **in *Downscaling projections of climate change in São Tomé and Príncipe Islands, Africa*, Sin Chan Chou et al., 2020**

[2] Data collected at the São Tomé Airport station, the only station with a data series of the last 50 years in the period from 1992 to 200

[3] Climate Change Knowledge Portal for Development Practitioners and Policy Makers, World Bank, São Tomé and Principe - https://climateknowledgeportal.worldbank.org/country/sao-tome-and-principe

[4] Climate Change Knowledge Portal for Development Practitioners and Policy Makers, World Bank, São Tomé and Principe - https://climateknowledgeportal.worldbank.org/country/sao-tome-and-principe

[5] According to IPCC's GHG concentration scenarios for intermediate emissions RCP4.5 and high emission RCP8.5.

[6] Climate Change Knowledge Portal for Development Practitioners and Policy Makers, World Bank, São Tomé and Principe - https://climateknowledgeportal.worldbank.org/country/sao-tome-and-principe

[7] Third National Communication - São Tomé and Príncipe - São Tomé, 2019

[8] https://climateknowledgeportal.worldbank.org/country/sao-tome-and-principe/climate-data-projections

[9] Third National Communication - São Tomé and Príncipe - São Tomé, 2019

[10] IPCC, 2023: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland. https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf

[11] Island insights: Surging Seas and Increasing Rains, Analyzing Flood Risks in São Tomé e Príncipe, District by District, February 2024. Prepared under the WACA project - https://datacatalog.worldbank.org/search/dataset/0065823/S-o-Tom--e-Pr-ncipe-s-Flood-Risk-Study---WACA-STP-project- .

[12] Image from Workd Bank WACA project https://storymaps.arcgis.com/stories/2b69b33c3c75482b86ec985e1dca6f49

[13] PNOT,2019

[14] Multisector Investment Plan, 2017. Of these 19 events, only 9 have information about affected people (over 1200), but without precising the meaning of "affected".

[15] Data from the International Disaster Database, accessed on 29Februry 2024 in www.emdat.be

[16] Heavy Rains & Floods, Situation Report Nº 1, United Nations, January 2022

[17] Climate Change Knowledge Portal for Development Practitioners and Policy Makers, World Bank, São Tomé and Principe - https://climateknowledgeportal.worldbank.org/country/sao-tome-and-principe

[18] https://www.worldsaid.com/node/1079

[19] https://reliefweb.int/report/sao-tome-and-principe/sao-tome-and-principe-floods-and-landslides-emergency-plan-action-epoa#:~:text=On%2030%20December%202021%2C%20the,in%20the%20country%20and%20embassies.

[20] Monthly precipitation data from World Clim: CRU-TS 4.06 (Harris et al., 2020) downscaled with WorldClim 2.1 (Fick and Hijmans, 2017). Fick, S.E. and R.J. Hijmans, 2017. WorldClim 2: new 1km spatial resolution climate surfaces for global land areas.

[21] , S.C., de Arruda Lyra, A., Gomes, J.L. *et al.* Downscaling projections of climate change in Sao Tome and Principe Islands, Africa. *Clim Dyn* 54, 4021–4042 (2020). https://doi.org/10.1007/s00382-020-05212-7

[22] IWRM Implementation Plan for São Tomé and Príncipe, 2021.

[23] Axis 1.1, 1.2 and 1.3 from the Action Plan for Adaptation Technology Transfer in the water sector, 2023.

[24] According to the first Voluntary National Review (VNR), June 2022, between 2015 and 2020, the proportion of illegal deforestation was reduced by 10.7 p.p., from 64.6% in 2015 to 53.9% in 2020,

[25] E.g. United Nations Environment Programme (2023). Nature-based Infrastructure: How natural infrastructure solutions can address sustainable development challenges and the triple planetary crisis. 2023, Geneva. https://content.unops.org/publications/Nature-based-Infrastructure_EN.pdf

B. PROJECT DESCRIPTION

Project description

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the PIF guidance document. (Approximately 3-5 pages) see guidance here

To increase climate resilience of urban areas and vulnerable communities against water insecurity and floods in São Tomé and Principe (Objective), hence contributing for ecosystems preservation, and hampering social and economic opportunities (Impact), the proposed project will promote i) an enabling environment for resilient IWRM and ii) access to resilient drainage and water infrastructures and management (Components).

In the proposed alternatives (with project) scenario, barriers to climate resilience will be removed by i) strengthening the institutional framework, policy development and operationalization for a better integration of natural water resources and waste sectors (including drainage and sanitation) – water-sanitation-waste nexus; ii) Improving management of watershed and drainages infrastructures; iii) reducing water quality risk through effecting monitoring and reducing pollution sources such as waste; and) effective engagement with citizens and communities to contribute towards a more climate resilient São Tomé and Principe (Outcomes).

The proposed project is set out to reflect the following **theory of change (ToC)**:

IF the institutional framework, the legal and regulatory instruments and the technical capacity are available to enable local, regional and national authorities to operationalize an integrated approach to water resources management that addresses flood risks and adequate city planning;

IF forestry & conservation services, NGOs and local communities receive support to effectively manage watersheds;

IF adequate climate resilient drainage infrastructures are constructed and managed in most populated areas with high flood vulnerability;

IF a comprehensive system and the necessary commitment are in place to monitor and manage the quality of water resources in the watershed;

IF local authorities are equipped and trained to operationalize an effective waste management operation that reduces the risks of water contamination and blocking of drainage system, and to adopt an integrated approach to Water Resources Management;

THEN

The resilience of urban areas and communities to the impacts of climate change driven floods and water security in São Tome and Principe is increased, contributing to improved ecosystems, as well as increasing social wellbeing and economy development opportunities.

BECAUSE National, regional and local authorities have the relevant institutional and legal frameworks, as well as technical capacity to operate the tools and infrastructures that will allow for monitoring water quality and quantity in the watershed, reduce peak water flows through upstream natural solutions that promote dissipation and aquifer recharge, and improved infrastructure that maximize the drainage capacity in downstream populated areas.

Moreover, the ToC is based on a set of **assumptions:**

1. Policy makers approve and promote the application of key legislation;
2. Technical staff from different national, regional and local authorities are willing to engage in cross sector cooperation to improve planning, budgeting and operationalization of an IWRM approach that promotes flood prevention;
3. Local communities and key project stakeholders actively participate in and support the deployment of nature-based solutions to prevent peak water flows and rainwater runoff and contribute to aquifer recharge and ecosystem conservation;

4. Downstream costal protection and drainage infrastructure are in Place, as anticipated by the project for the "rehabilitation of the São Tomé costal road (Marginal)";
5. Citizens are willing to be an active part of building a more resilient country.

The change proposed by this project can also be leverage by **key drivers** that are in place, notably: 1) Political commitment with Climate Adaptation and IWRM; 2) Motivation of technical staff to operationalize existing Policies, Strategies & Plans; and 3) Citizens' increased awareness about the economic, social and environmental impacts of floods.

The **Theory of Change** for the project is summarized in the **Figure 16** below.

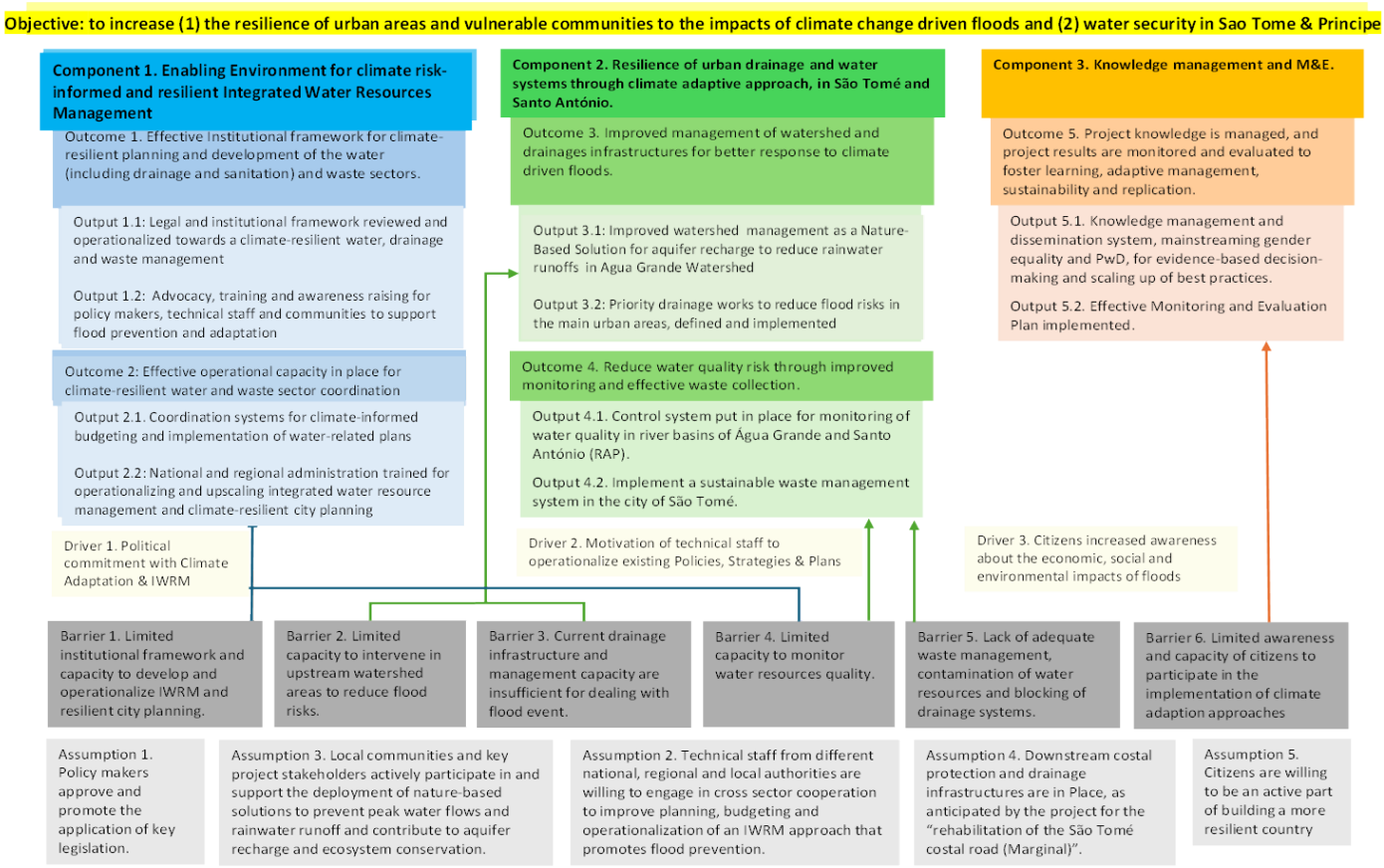

Figure 16. Theory of Change of proposed project

Project Components

Component 1: Enabling Environment for climate risk-informed and resilient Integrated Water Resources Management (National Scope)

1. Under this component, the proposed project will address existing institutional and technical barriers to develop and operationalize Integrated Water Resources Management (IWRM) and climate-resilient city planning techniques in São Tomé and Príncipe (Barrier 1). The improvements in institutional and technical framework for operationalizing (IWRM) addressed under this component, will also create an better environment

for component 2 to address the limited capacity to monitor water resources quality (Barrier 4). The proposed initiative will support the implementation of the PIGIRH's strategic area 4, and its overall objective of establishing a comprehensive policy environment that supports the implementation of IWRM in S. Tomé e Príncipe. It is foreseen that better management of water, sanitation, and particularly solid waste, coupled with improved environmental sanitation practices by communities, will contribute to more resilient IWRM.

Outcome 1. Effective Institutional framework for climate-resilient planning and development of the water (including drainage and sanitation) and waste sectors

GEF/LDCF funding: $275 000; co-financing: $4 500 000

2. While the country has made relevant progress in the institutional and legal framework in wider water sector (including capacity strengthening of DAAC and DGRNE), as well as the preparation of policies and planning tools, several limitations persist, notably the need to clarify existing gaps and overlaps between government departments, as well as legal and regulatory documents, the approval and adoption of planning tools (e.g., PNOT, District Master Plans), as well as the operationalization of sector plans (e.g. PAGIRSU). These limitations and interventions required are identified in PIGIRH and ENPASA. Under this Outcome, the project will support the setting-up of an effective institutional framework for climate-resilient planning and sector development (therefore increasing interdepartmental cooperation), while building awareness on the nexus between water-sanitation-waste in flood prevention and adaptation, therefore contributing to enhance flood resilience and water security in S. Tomé e Príncipe.

Output 1.1: Legal and institutional framework reviewed and operationalized towards a climate-resilient water, drainage and waste management.

GEF/LDCF funding: $195 000; Co-financing: $4 000 000

3. The project will propose adjustments to the current institutional and legal frameworks that hinder effective adaptation in the water sector, along with policy development (and the subsequent support for its implementation), in view of a better integration of water/wastewater, sanitation and solid waste management - therefore fully aligned with the ENPASA's 2022-2030 strategic objectives. To do this, the project will use as baseline on the limitation and identified improvements in PIGIRH and ENPASA, and will work close collaboration with DGRNE and INA to elaborate and implement the required advances. Similarly, the legal and regulatory framework will also be reviewed, so that remaining (critical) gaps in relevant legislation can be addressed as well, contributing to policy coherence. Moreover, support will be provided to DAAC, in coordination with DGRNE, INA and CDAG, to operationalize the institutional framework for Municipal Solid Waste (MSW) management, through the approval and adoption of the PNOT and the PDAG, as well as through the provision of technical capacity (and resource) building for the implementation of the PAGIRSU. While the current sector policies already include relevant gender mainstreaming, the review and operationalizing activities under this output will contribute to further strengthen the gender responsiveness of the legal and institutional framework, notably by engaging women and genders experts in the process. The project will also facilitate improvements needed to the enabling environment for climate services to function effectively and across sectors.

Output 1.2: Advocacy, training and awareness raising for policy makers, technical staff and communities to support flood prevention and adaptation.

GEF/LDCF funding: $80 000; Co-financing: $500 000

4. To further support flood prevention and adaptation, the project will provide advocacy sessions for policy and decision makers, as well as training aimed at technicians from public, private and civil society organizations, which are involved in the water, sanitation (drainage) and waste sectors (at the local, regional, and national level), equipping them with the necessary information, skills and knowledge required to perform their tasks and mandate. Among beneficiaries of the training and awareness raising, women from both the technical staff and communities will be sensibly targeted. The activity will also involve the mobilization of sector and genders experts for the promotion of gender-sensitive educational and behavioral change actions in the field of solid waste management targeting communities and urban citizens, mobilizing men and women to become effective agents of change, thus contributing to the sustainability of project interventions beyond the project's lifespan.

Outcome 2: Effective operational capacity in place for climate-resilient water and waste sector coordination

GEF/LDCF funding: $190 000; Co-financing: $ 300,000

5. Under this outcome, the project will contribute to enhance flood resilience and water security by contributing for better informed water resources and waste cross-sector coordination and decision-making, while building capacities for effective sector planning, monitoring and budgeting. It will do so, by, i) increasing the skills and knowledge of national and regional administration staff and ii) providing them (and relevant institutions) with sufficient information on water resources from springs used for supply. These interventions, in combination, will increase the institutional capacity to have coordinated, information-driven planning, monitoring, budgeting and revenue generating procedures for the sector, and thus the operationalization of an IWRM approach that contributes to a sustainable climate change adaptation that strengthens the country's resilience to climate events.

Output 2.1: Coordination systems for climate-informed budgeting and implementation of water-related plans.

GEF/LDCF funding: $165 000; Co-financing: 200,000

6. The project will contribute to the development of better cross-sector national and regional coordination systems for data-driven planning, budgeting (including revenue generating procedures) and implementation, which are conducive to the desired IWRM approach that strengthens São Tomé and Príncipe's resilience to climate events. This output will be achieved through a series of interconnected interventions. Water meters will be installed at the upstream springs that supply the District of Água Grande and the city of Santo António (RAP), to monitor and manage existing water resources. By measuring the flow of water at its source, EMAE (and other relevant national authorities) can gain insights into the availability of water and prevent water extraction from exceeding sustainable levels. This information will also allow other institution, such as DAAC and the National Institute of Meteorology, to better monitor water resources, assess impacts of climate change, improve projections and forecast as well as define and monitor climate adaptation measures. In collaboration with the Ministry of Environment and the Ministry of Finance, the project will clarify and strengthen an effective sector Planning, Monitoring and Budgeting system. This involves a comprehensive approach that integrates strategic planning (involving key stakeholders), effective monitoring mechanisms (based on key performance indicators that align with the sector goals and objectives), and transparent budgeting processes (with clear allocation and expenditure reporting and with measures to hold stakeholders accountable for the efficient

use of resources). Furthermore, regular reviews and a commitment to continuous improvement will be essential for resilient and adaptive sector management.

7. These two interventions will then provide the basis to optimize State capacities to establish revenue generating procedures for environmental sanitation – involving policy makers as well as technical staff at the local, regional, and national level, which is also in line with the provisions of the PAGIRSU. Again, the project will work with the Ministry of Environment and the Ministry of Finance to explore innovative financing mechanisms, which can be coupled with the more 'traditional' approach of revenue from environmental user-fees, tariffs and/or taxes, which can be (partially or fully) allocated to environmental sanitation programs. Implementing a combination of these strategies, tailored to the specific context of São Tomé and Príncipe, can help promoting sustainable and effective waste management practices, which is linked to Output 4.2, as well as a wider financial sustainability of the project results and the overall water and sanitation sector.

8. Finally, for better informed upstream interventions (linked to Barrier 2), the project will support the preparation of a watershed management plan for Água Grande District, including the required hydrological, hydraulic and land use studies, with the close involvement of DGRNE, INA and the Água Grande District Council, to ensure appropriation, transfer of knowledge and enhance national capacities to take decision based on accurate data and aligned with relevant best practices. This is in line with priority 1 action of the Master Plan for Água Grande (2019).

Output 2.2: National and regional administration trained for operationalizing and upscaling integrated water resource management and climate-resilient city planning.

GEF/LDCF funding: $25 000; Co-financing: 100,000

9. Technical staff from national and regional administration will be trained for operationalizing and upscaling IWRM and resilient city planning, beyond the geographic scope of the proposed project. In particular, key sector stakeholders, such as DAAC, DGRE, INA, EMAE and LNESTP, will take part in the preparation of the studies developed under Output 2.1, thought a close cooperation with the contacted implementor, and the advisory of INPG. Additionally, training will be provided to promote a more efficient, and better coordinated information-based planning, monitoring, and budgeting, with focus on the actual operationalization of the tools, systems and procedures developed under Output 2.1. Moreover, the hydrological and hydraulic studies conducted will be made available via the knowledge management system (Outcome 5) to national policymakers and project developers, to upscale the results beyond the Água Grande District (and the city of São Tomé). The studies and training activities will include gender aspects and will engage women and gender experts.

Component 2. Resilience of urban drainage and water systems through climate adaptive approach, in São Tomé and Santo António

10. Under this component, the proposed project will, on one hand, address the current limited capacity to intervene in upstream watershed areas to reduce flood risks (Barrier 2) and the insufficient drainage infrastructure and flood management capacity for dealing with flood events (Barrier 3). On the other hand,

the project will address the current limited capacity to monitor water resources quality (Barrier 4) and the lack of adequate solid waste management practice, which in turn leads to the contamination of water resources and the blocking of existing drainage systems (Barrier 5). The proposed activities will contribute to the implementation of relevant national plans and strategies, such as the PNOT, the ENPASA 2022-2030 and the PAGIRSU.

Outcome 3. Improved management of watershed and drainages infrastructures for better response to climate driven floods

GEF/LDCF funding: $2 526 669; Co-financing: $11 245 705

11. As mentioned, the adoption of adequate watershed management practices that promote aquifer recharge and contribute to contain water runoff (minimizing the effect of intense rains events and the risk of floods downstream) is not yet mainstreamed in S. Tomé e Príncipe. This is particularly relevant for the watersheds that have their downstream area in Água Grande District (coming from neighbor districts of Lobata and Mézochi), the most populated in the country, as well as in River papagayo, upstream from Santo António in the region of Principe. Moreover, while priority intervention areas have been identified to contain the impact of floods, notably in the city of São Tomé, there is a limited capacity of the governmental authorities to carry out the required technical studies and the subsequent construction of key infrastructures adapted to a projected scenario of increased occurrence and intensity of extreme rainfall events (considering also the synergies with EIB-funded 2024-2025 rehabilitation the coastal road of the city of São Tomé - Marginal),

12. The proposed interventions under the project will thus be implemented through a combination of nature-based solutions (NBS) – upstream, and improvements in existing drainage infrastructure - downstream, so these can better respond to climate driven floods. 1. Special attention will be given to genders aspects during detailed design and implementation of activities as women (and girls) are key stakeholders as they often play a key role in economic activities - such as informal business and agriculture, that are specially affected by flood event.

13. The tender to be launched to contract the construction company in charge of rehabilitation of the drainage system will also include the mandatory participation of a local company that will be in charge of maintenance of the renewed infrastructure for at least 3 years after project conclusion. This will increase the infrastructures' impact and durability, while promoting engagement of local businesses. Monitoring of this maintenance will be done by government institutions, namely the DAAC, EMAE and Institute if Roads. In the case of the upstream NBS, a similar case will apply, and the monitoring will be done by the Directorate of Forestry and Biodiversity.

Output 3.1: Improved watershed management for aquifer recharge to reduce rainwater runoffs in Agua Grande Watershed.

GEF/LDCF funding: $ 330 000; Co-financing: $5 000 000

14. The proposed upstream interventions will directly contribute to implement selected priority adaptation projects identified under the NDC Partnership's Climate Action Enhancement Package (CAEP), by promoting aquifer recharge and reduced rainwater run-off in Água Grande watershed and Papagaio river basin, with a

preference for the adoption of NBS, such as reforestation and increasing soil permeability. In close articulation with the Directorate of Forests and Biodiversity (DFB), the project will capitalize on the hydrological, hydraulic and land use studies developed under Outcome 2, to plan and implement context specific NBS in Água Grande and Papagaio river watershed. This will mean, in practical terms: i) prioritizing the use of green infrastructure to absorb and slow down runoff, ii) promoting the establishment of riparian buffer zones along water bodies to prevent sedimentation, reduce erosion, and enhance groundwater recharge and iii) promoting agroforestry practices that combine agriculture and forestry to reduce runoff (incorporating, to the extent possible, traditional knowledge and practices that promote sustainable water management). The actions undertaken will incorporate best practice, avoiding water-intense and monoculture species, and using species that are expected to be resilient to climate change, including increased climatic variability. This will contribute to the continuous valorization of the Príncipe Island Biosphere Reserve (created in 2012) as a UNESCO Biosphere Reserve. The project will actively promote the participation and support of local businesses in the implementation of the NBS and similar techniques. The experience and competencies acquired by these private sector organization under this project will contribute for the acceleration of their entrepreneurial activity.

15. In parallel, interventions will include training and capacity building of national (notably from DFB) and regional administration staff (including from Água Grande District Council and the regional administration of Principe), NGOs and local communities to build skills and awareness about the importance of aquifer recharge, reducing runoff, and thus promoting the replication of the activities and scale up project results.

Output 3.2: Priority drainage works in the main urban areas, defined and implemented.

GEF/LDCF funding: $ 2 196 000; Co-financing: $ 6 245 705

16. To define and implement downstream priority drainage works in the main urban areas, a gender-responsive, evidence-based, rapid needs assessment (RNA) will be carried out to identify areas of intervention in the cities of São Tomé and Santo António (RAP). As mentioned, priority intervention areas have been identified to contain the impact of floods, notably in the city of São Tomé (e.g. CityRAP by UN-Habitat, 2017; PD Água Grande, 2019; PD Principe, 2019; INAE, 2022), therefore a special attention should be put on triangulation of (and infer) information from existing information and studies, rather than a thorough assessment. While the assessment will cover both cities of São Tomé and Santo António, infrastructure rehabilitation under the project will focus on the city of São Tomé - the main and most populated urban area in São Tomé and Príncipe (and the most prone to flood events), also to ensure synergies with the EIB funded Project – Rehabilitation of coastal road and Water supply. Therefore, following the RNA prioritization, the project will develop a structuring plan for the priority areas targeted for intervention in the city of São Tomé (supporting the PNOT implementation[1][3]). In addition to the climate-resilient infrastructure aspects to be considered, the plan will include the necessary environmental, social and economic considerations, as well as strategies to ensure community engagement, (e.g., communication and outreach), to minimize the potential identified negative impacts of rehabilitation works. The structuring plan will be the basis for launching two separate tendering procedures, one for the rehabilitation of the drainage network in targeted intervention areas in the city of São Tomé (construction works) and the other for construction supervision (including the

implementation of the applicable environmental and social safeguard standards by contractors), following the applicable LDC Fund procurement procedures.

Outcome 4: Reduce water quality risk through improved monitoring and effective waste collection.

GEF/LDCF funding: $ 1 604 000; Co-financing: 6,000,000

17. As outlined above, there are currently limited capacity and tools, within national and regional authorities, to monitor water quality resources (from river, lakes, springs and aquifers), as well as, to better plan the use of these water resources for different purposes, based on its quality. Moreover, same limitations occur when it comes to solid waste collection and safe disposal and treatment, notably in highly populated area such as the city of Sao Tomé, with impact not only in Public Health, but also in the city's drainage system.

18. Therefore, the project will contribute to increased water safety and climate resilience, by reducing water quality risks through improved monitoring (linked to the National Water Information System) and by implementing an effective (and sustainable) waste collection and management system in the city of São Tomé.

Output 4.1: Control system put in place for monitoring of water quality in river basins of Água Grande and Santo António (RAP).

GEF/LDCF funding: $ 235 000; Co-financing: 700,000

19. A comprehensive control system will be put in place for monitoring of water quality in river basins of Água Grande and Santo António (RAP), linked with the watershed management interventions foreseen under Outputs 2.1 and 3.1. The proposed project will support the development and subsequent implementation of a Water Quality Control Plan (WQCP) for Água Grande and Santo António (RAP) river basins, involving LNESTP, but also DAAC, DGRE, INA and EMAE. The development of a WQCP is one of the measures identified by the Technology Needs Assessment (TNA/TAP, 2023) project, funded by the GEF, and is particularly important to ensure that the implemented NBS do not inadvertently contribute to water contamination (both upstream and downstream) and consequent public health hazards. The WQCP implementation will involve defining and implementing procedures for monitoring water quality in the environment (rivers, springs, etc.), as well as the parameterization and definition of: i) the groups of water quality analyses with the respective parameters in accordance with the legislation or regulations in force in São Tomé and Príncipe, ii) the maintenance of the sampling sites, and iii) compliance with the sampling frequency and schedule. It may also involve equipping a water quality laboratory for LNESTP to focus on natural water resources, serving as a complement to EMAE's central laboratory focused on water supply systems. Similarly to the adoption of NBS to promote aquifer recharge and reduced rainwater run-off in Água Grande watershed (Output 3.1), the project will promote the realization of technical studies for the construction of a NBS wastewater treatment facility (WWTP) in the city of São Tomé (thus contributing to the implementation of the PNOT). The use NBS for treatment wetland technology is already well documented in tropical environment and has a potential for being more cost-efficient in comparison with conventional mechanical-based treatment systems, notably through lower requirements for operational cost and technical capacity[2][4]. This study will

have a potential for driving innovation and a transformational process in the adaptation to climate change in São Tomé and Principe.

20. The above knowledge-based interventions (e.g., plans and studies) will be developed in close collaboration with national and regional stakeholders, including inter alia INAE and the Água Grande District Council (but also UN-Habitat) to develop future climate-resilient wastewater infrastructure, or LNESTP (for systematic water quality monitoring), ensuring appropriation and transfer of knowledge. This comprehensive capacity building approach, coupled with technical staff training (e.g., from LNESP, DGRNE, INA and RAP on control systems for monitoring water quality in river basins) will once more contribute to replicating and/or scaling up project results and practices, including to the other river basins of S. Tomé e Príncipe.

Output 4.2: Implement a sustainable waste management system in the city of São Tomé.

GEF/LDCF funding: $ 1 369 000; Co-financing: 5,300,000

21. Climate-related intense rainfall drives solid waste into the drainage systems, thus reducing their capacities and magnifying floods impacts. For this reason, the project will support the implementation of a sustainable waste management system in the city of São Tomé, building on the improved institutional framework for Municipal SWM developed under Output 1.1. It will do so by working closely with Água Grande District Council in the definition of an Integrated SWM Operational Plan for Água Grande District (including the definition of an operational management plan for the existing Penha disposal site – lixeira) and in supporting its subsequent implementation in the City of S. Tomé, contributing to the enactment of the ENPASA and the PAGRISU. This will involve: i) strengthening the regulatory and advisory capacity of DAAC to oversee the implementation of PAGIRSU, including the provision of international ad hoc expertise, as required, ii) supporting the regular operation of waste collection in Água Grande District, though the provision of equipment and technical capacity to the District Council, to ensure the adequate operation of existing waste collection and disposal systems, iii) improving the management of existing waste disposal site (Penha) to mitigate environmental and social impacts (based on the SWM Operational Plan), though the implementation of priority infrastructures to facilitate operation and mitigate public health impacts and the provision of equipment and technical capacity to the District Council, for improved site management, and iv) strengthening reactivating waste valorization capacity (e.g., the District Council's organic waste unit, SCM's glass valorization unit) and requesting support from the SCALA PSE Facility to promote private sector involvement in organic waste valorization. The project will actively promote the participation and support of local businesses in the implementation of the waste collection, management, and valorization activities. The experience and competencies acquired by these private sector organization under this project will contribute for the acceleration of their entrepreneurial activity.

22. This output will include activities to build capacity for adequate SWM, which will be cross-cutting to the abovementioned. initiatives. Finally, it will also include the completion of technical studies and the preparation of specifications for the construction of a controlled landfill in Água Grande, which will eventually replace the current uncontrolled dump site in Penha, in collaboration with the Água Grande District Council and LNESTP.

Component 3: Knowledge management and M&E

23. Projects such as this one that aims to establish a momentum and improve the institutions that face risks of the public (citizens) and relevant national and regional stakeholders not having access to the status of project activities and the knowledge generated during and after the duration of the project. Without effective communication, the outputs of the project may not help to build future actions in the relevant field. With various ongoing initiatives and projects (see above), effective communication and dissemination of knowledge products is key for future planning and sustenance of knowledge.

Outcome 5. Project knowledge is managed to foster learning, adaptive management, sustainability and replication.

GEF/LDCF funding: $ 390 000; Co-financing: $880 000

24. Under this Outcome, project knowledge will be managed to foster learning, adaptive management, sustainability, and replication. Through the proposed knowledge management and dissemination system, the project will contribute to increase the awareness and capacity of citizens to participate in the implementation of climate adaptive approaches (Barrier 6). The project will furthermore integrate gender-sensitive approaches in knowledge and communication, to ensure that best practices and lessons learned from the project are shared in a way that takes into account the specific needs, experiences and contributions of different genders. By integrating a gender perspective, the project will promote inclusion and address existing gender inequalities and biases and promote gender equality and women's empowerment.

Output 6.1: Knowledge management and dissemination system, mainstreaming gender equality and PwD, for evidence-based decision-making and scaling up of best practices.

GEF/LDCF funding: $ 390 000; co-financing: $880 000

25. A knowledge management and dissemination system will be developed, taking into consideration the mainstreaming of gender equality and People with Disability (PwD), for evidence-based decision-making and scaling up of best practices. The system will serve to share targeted contents and to disseminate relevant initiatives with key stakeholders, ensuring that gender-sensitive approaches reach decision-makers, policymakers, technical staff and the overall population. Moreover, by fostering a collaborative and learning environment among communities and urban citizens, the system has the potential of mobilizing men and women to become effective agents of change. A MSME engagement campaign will be delivered to mobilize local business do adhere to waste collection initiatives that contribute to reduce the risk of clogging and damaging drainage systems. MSMEs are expected to actively participate in the campaign, defending the new adaptive infrastructure once they are aware of the benefits it will bring in terms of regular savings in maintenance and repair. In addition, the project will create institutional and operational capacities for dissemination and exchange of knowledge and experiences related to adaptation to climate change, notably through the creation of a center for interpreting, raising awareness and promoting adaptation to climate change.

Outcome 4: Project results are monitored and evaluated to foster adaptive management and sustainability

Output 6.1: Effective Monitoring and Evaluation Plan implemented.

GEF/LDCF funding: $ 90 000; co-financing: $120 000

26. To ensure the effectiveness and impact of gender-responsive interventions, the project will focus on the development and implementation of an effective project Monitoring and Evaluation (M&E) Plan, based on gender sensitive data collection approach. This plan will include the collection and analysis of gender-disaggregated data to assess the outcomes and impact of interventions. The results will inform decision-making processes, allowing for adjustments and improvements to maximize sustainable results and investments made by the project.

The following table explains how the project will generate adaptation benefits through this GEF project (additionality). Through the project's additionality, it will deliver the following adaptation benefits:

- Enhance the adaptive capacity of 48,174 vulnerable women and 47,221 vulnerable men to make their livelihood resilient to climate change
- 400 ha of land managed for climate resilience.
- 6 KM of stormwater drainage reconstructed for climate-resilient urban setting.
- 3 policies/plans that will mainstream climate resilience
- 502 people trained (including 254 women).
- 28 private sector enterprises engaged in climate change adaptation and resilience actions.

Current practice (Baseline)	**Project Alternative (Additionality)**
Project Component 1 - Enabling Environment for climate-risk informed and resilient IWRM (National Scope)	
There is currently a limited institutional framework (and capacity) in place to develop and operationalize IWRM and climate-resilient city planning techniques in S. Tomé e Príncipe. While the country has made relevant progress in the institutional and legal framework in wider water sector (including capacity strengthening of DAAC and DGRNE), as well as the preparation of policies and planning tools, several limitations persist, notably the need to clarify existing gaps and overlaps between government departments as well as legal and regulatory documents, the approval and adoption of planning tools (e.g., PNOT, District Master Plans), as well as the operationalization of sector plans (e.g. PAGIRSU). Moreover, there is limited capacity to monitor water resources quality. The lack of capacity to operationalize a regular monitoring of the quality of the water resources (river, lakes, springs and aquifers) significantly increases uncertainly and the vulnerability of the country to climate change, hampering the capacity of governmental organizations to plan for a sustainable use of water resources for different purposes, based on its quality, contributing to increased health problems, uncontrolled pollution events, and constraints to the drainage capacity to mitigate floods. This is becoming increasingly	The project will foster the enabling environment for climate risk-informed and resilient Integrated Water Resources Management. It will specifically propose adjustments to the current institutional and legal frameworks, along with policy development (and the subsequent support for its implementation), in view of a better integration of climatic aspects in water/wastewater, sanitation and solid waste management - therefore fully aligned with the ENPASA's 2022-2030 strategic objectives. Support will be provided to DAAC, in coordination with DGRNE, INA and CDAG, to operationalize the institutional framework for Municipal Solid Waste (MSW) management, through the approval and adoption of the PNOT and the PDAG, as well as through the provision of technical capacity (and resource) building for the implementation of the PAGIRSU. To further support flood prevention and adaptation, the project will provide advocacy sessions for policy and decision makers, as well as training aimed at technicians from public, private and civil society organizations (at the local, regional, and national level). **(Legal and regulatory additionality)** Moreover, the project will also contribute for better cross-sector national and regional coordination systems for data-driven planning, budgeting (including revenue generating procedures) and implementation, which are conducive to the desired IWRM approach that strengthens the country's resilience to climate events. In parallel, the project will increase the skills and knowledge of national and regional administration staff (e.g., from DAAC, DGRE,

Current practice (Baseline)	Project Alternative (Additionality)
problematic as climate-induced intense rainfall drives solid waste into drainage systems. Finally, existing capacities for effective sector planning, monitoring and budgeting are generally still weak.	INA, EMAE and LNESTP) for operationalizing and upscaling IWRM and resilient city planning, beyond the geographic scope of the proposed project - 502 participants in planned training outputs (**Institutional & governance additionality**).
Project Component 2 - Resilience of urban drainage and water systems through climate adaptive approach, in São Tomé and Santo António	
There is currently a limited capacity of forestry & conservation services, NGOs and local communities to intervene in upstream watershed areas to reduce flood risks. Indeed, the adoption of adequate watershed management practices that promote aquifer recharge and contribute to contain water runoff (minimizing the effect of intense rains events and the risk of floods downstream) is not yet mainstreamed in S. Tomé e Príncipe. This is particularly relevant for the watersheds that have their downstream area in Água Grande District (coming from neighbor districts of Lobata and Mé-Zochi), the most populated in the country.	The project will address the current limited capacity to intervene in upstream watershed areas to reduce flood risk, by promoting improved watershed management practices in Água Grande watershed. These practices will be implemented in 400 hectares of the watershed that flow into Água Grande (**Specific environmental additionality).** This will contribute to reduce the vulnerability of communities along the watershed, including women and girls involved in agriculture and dependent on natural resources. **(Socioeconomic additionality)** In parallel, interventions will include training and capacity building of national (notably from DFB) and regional administration staff (including from Água Grande District Council), NGOs and local communities to build skills and awareness about the importance of aquifer recharge, reducing runoff, and the role of NBS, and thus scale up project results (502 participants in planned training outputs). **(Socioeconomic additionality)** The specific use of improved watershed management practices is not yet common in STP, hence the project will allow for demonstrating feasibility of this technologies, prompting its wider adoption. (**Innovation additionality)**
Current drainage infrastructure and management capacity are insufficient for dealing with flood events. Moreover, while priority intervention areas have been identified to contain the impact of floods, notably in the city of São Tomé, there is a limited capacity of the governmental authorities to carry out the required technical studies and the subsequent construction of key infrastructures adapted to a projected scenario of increased occurrence and intensity of extreme rainfall events	The project will promote improvements in existing drainage infrastructure - *downstream*, so these can better respond to climate driven floods. A gender-responsive, evidence-based, rapid needs assessment (RNA) will be carried-out to identify areas of intervention in the cities of São Tomé and Santo António (RAP), following which a structuring plan will be developed, mainstreaming climate resilience, for the priority areas targeted for intervention in the city of São Tomé – the most populated area with high flood vulnerability, and adequate climate resilient drainage infrastructure will be constructed/rehabilitated and managed - 502 participants in planned training outputs (**Socioeconomic additionality**). This will contribute to reduce the vulnerability of informal business, often led by women. **(Socioeconomic additionality)** In addition to the climate-resilient infrastructure aspects to be considered, the plan (and subsequent construction works) will include the necessary environmental, social and economic considerations, as well as strategies to ensure community engagement.

Current practice (Baseline)	Project Alternative (Additionality)
There is a current limited capacity to monitor water resources quality. The lack of capacity to operationalize a regular monitoring of the quality of the water resources (river, lakes, springs and aquifers) significantly increases uncertainly and the vulnerability of the country to climate change, hampering the capacity of governmental organizations to plan for a sustainable use of water resources for different purposes.	The project will contribute to increased water safety and climate resilience, by reducing water quality risks through improved monitoring (linked to the National Water Information System). A comprehensive control system will be put in place for monitoring of water quality in river basins of Água Grande and Santo António (RAP), linked with the watershed management interventions foreseen under Outputs 2.1 and 3.1. The proposed project will support the development and subsequent implementation of a Water Quality Control Plan (WQCP) for Água Grande and Santo António (RAP) river basins, involving LNESTP, but also DAAC, DGRE, INA and EMAE (**Socioeconomic additionality**). The project will also promote the realization of technical studies for the construction of a wastewater treatment facility (WWTP) in the city of São Tomé (502 participants in planned training outputs). The use of NBS for wastewater treatment has not been used in STP. The proposed project will allow for demonstrating its feasibility and promoting this new technology (**Innovation additionality**).
There is a limited capacity for solid waste collection and safe disposal and treatment (both practices and infrastructure in place), notably in highly populated area such as the city of Sao Tomé. With the increasing frequency of intense rainfall events, solid waste is repeatedly driven by runoff in the city's drainage system, under extreme rainfall and floods events, further hampering the drainage systems' capacity to contain climate-induced floods.	The project will support the implementation of a sustainable waste management system in the city of São Tomé, to reduce the climatic vulnerability of the city., Through the project, local authorities will be equipped with tools and knowledge to develop an effective solid waste management that reduces the risks of blocking of drainage system, thus improving the drainage capacities to mitigate floods (climate additionality)..
Project Component 3 - Knowledge management and M&E	
There is a limited awareness and capacity of citizens to participate in the implementation of adaptive approaches that contribute to a more resilient community. Despite certain a degree of awareness about climate change issues, most of the citizenship lack deeper understanding on co-relations with other aspects of their lives and, specially, the knowledge and capacity to act upon climate change impacts. Also, although the effects are already affecting many activities, the population is yet not mobilized to see itself as an agent for adapting to climate change, and to develop individual and collective changes of behavior or risk management strategies.	Through the proposed knowledge management and dissemination system and M&E Plan, the project will contribute to increase the awareness and capacity of citizens to participate in the implementation of climate adaptive approaches. The system will effectively help information dissemination (including project results) taking into consideration the gender-differentiated level of understanding, access to information and level of education. (**Socioeconomic additionality**) Increased awareness among stakeholders (including at the local level) and beneficiaries are crucial for the long-term effective use and adoption of gender-friendly and climate-resilient solutions. Understanding and awareness will improve public ownership and public behavior which, in turn, reduces environment-harming activities such as littering in drains and sewage networks.

Beneficiaries

The **overall beneficiaries** of the proposed project include the 223. 648 inhabitants, of São Tomé and Príncipe, that will benefit from the better enabling Environment for Resilient Integrated Water Resources

Management (component 1), thought the strengthening of the institutional framework for climate-resilient planning and development of the water (including drainage and sanitation) and waste sectors (Outcome 1) and an effective operational capacity in place for water and waste sector coordination (Outcome 2).

Also, the improvements in floods resilience in São Tomé and Santo António (Component 2), will benefit the overall population. First and foremost, these being the main cities in each Island, they represent a hub for economic and social activities with many inhabitants of other districts having their livelihoods in, or associated with, these cities. Also, São Tomé and Santo António concentrate many of the public services and hence any flood events have significant disruption of the citizens' access to governmental institution.

The proposed project will have a total of 95.395 people as **direct beneficiaries**, representing approximately 42,7% of the country's total population. This includes the 86.054 inhabitants (2023) of the Água Grande District (where the capital city of São Tomé is located) and the population of the Autonomous Region of Principe (9.341 inhabitants), where the project will enhance the resilience of urban drainage and water systems through climate adaptive approach, (component 2). To achieve these the proposed project will adopt an integrated approach to water management, that will include working in upstream areas with rural communities for implementing NBS for aquifer recharge, as well as reduce water runoff and soil erosion, as well as promoting the rehabilitation and management of priority drainage infrastructure to help cope with extreme events, (Outcome 3) and reduce water quality risk – impacting in urban population and natural ecosystems, through an improve waste management (Outcome 4).

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[1] Rehabilitation of the Unitary Network.

[2] Rodríguez-Domínguez, et.al, 2023, *Cost and Benefits of Treatment Wetlands in the Tropics.* https://link.springer.com/chapter/10.1007/978-3-031-23665-5_11

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

No

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

The implementing partner's capacity was assessed and rated low. At PPG stage, we will assess high risk areas, the likely support needed, and who could provide this support, in consultation with the GEF and national counterparts.

Overall, effective coordination among GEF-funded and non-GEF-funded projects in Sao Tome and Principe would enhance the country's capacity to address flood resilience and related challenges comprehensively and sustainably. Coordination will be done through:

1. Inter-agency coordination: The fact that the Ministry of Environment, through its different directorates, will facilitate coordination, aiming to aligning objectives, capitalizing on synergies and avoiding gaps. Equally, the project managers will encourage the Ministry of Environment to lead coordination efforts with the World Bank's WACA and the EIB Water supply project and rehabilitation of the coastal road project. Coordination will be done through meetings, where partners will be sharing data and research findings, and identifying synergies to achieve common goals more efficiently. Coordination might also include joint planning sessions and sharing of resources and information.

2. Technical working groups: Establishing technical working groups or committees comprising experts from the most relevant projects can facilitate coordination and monitoring at the operational level. These groups will meet regularly to exchange technical knowledge, share best practices, and troubleshoot challenges collectively.

Complementarity with Existing and Past GEF, GCF and Other Projects and Programs

Ongoing Initiatives and funder	Complementarity with the GEF 8 project
West African Coastal Zone Resilience Investment Project (WACA ResIP), World Bank	The proposed GEF 8 project will make use of substantial studies identifying main flood risk and flood maps, to define its intervention areas, as well as in lessons learned in technical solutions and community engagement to tackle this subject. Conversely, the upstream interventions planned for this new GF 8 project will reduce flood risk in several areas identify by WACA+, including in downstream communities where the World Bank project invested in improving infrastructure.
STP Coastal Areas Resilience and Sustainable Tourism Project (WACA+), World Bank	The improvements in flood resilience in São Tome and Principe included in the proposed GEF 8 project are directly synergic with the WACA+ activities aimed at strengthening STP's policy framework and key institutions involved in coastal adaptation, management, and disaster risk reduction (through the National Early Warning System, CONPREC and community based Local Risk Management Committees).
Requalification of the coastal Road (Marginal) of São Tomé, European Investment Bank	Through its intervention in upstream areas, proposed GF 8 project will reduce the water volumes that will reach downstream areas. Also, the planned improvements in drainage system and reduction of waste reaching the draining systems in city of São Tomé will increase the resilience to extreme events such as floods in the city. These interventions will reduce the pressure and vulnerability of the coastal road being rehabilitated by the EIB project. Both projects intervening in similar geographic area and flood resilience topic will contribute to raise awareness and mobilize political and social commitment towards the subject.
Reduce the vulnerability of São Tomé and Príncipe to the impacts of Climate Change, strengthening the country's capacity to Implement an Integrated Adaptation Planning approach (NAP), Global Climate Fund	Both projects include a relevant institutional strengthening component focused on improving resilience to the impacts of climates change. While the GEF 8 project will focus mostly on IWRM and flood management, the GCF will have a wider scope. Through a coordinated approach, together the project have a potential for maximize its impacts. The final design of the actions to be implemented under the GEF 8 will be established in cooperation with this GCF initiatives to ensure alignment in terms of priorities, approaches, but also technical solutions being deployed.
Water Supply Project, European Investment Bank	The proposed GEF 8 project will coordinate its plan for infrastructure intervention in a way that generates synergies with infrastructure works carried out by EIB project in order to increase aggregated impacts. Such coordination in works and construction will also aim to minimizes the negative impacts for the population, traffic and the disruption of local businesses. The Ministry of Environment, through its different directorates, will ensure that coordination between initiatives such as

	these is strengthened, including the effective functioning of technical working groups for projects of similar nature. Also, the GEF 8 activities aimed at improving water resources, increased aquifer recharge and waste management will contribute to reduce the risk to water quality of the supply systems of EMAE, including those targeted by the EIB project. Additionally, by increasing resilience to flood events in the downstream areas, and contributing to increase water security, the GEF 8 will maximize the impact of the improvements to the water supply systems to be carried out under the EIB project.

Core Indicators

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

META INFORMATION – LDCF

LDCF **true**	SCCF-B (Window B) on technology transfer **false**	SCCF-A (Window-A) on climate Change adaptation **false**

Is this project LDCF SCCF challenge program?

false

This Project involves at least one small island developing State(SIDS).

true

This Project involves at least one fragile and conflict affected state.

true

This Project will provide direct adaptation benefits to the private sector.

true

This Project is explicitly related to the formulation and/or implementation of national adaptation plans (NAPs).

false

This project will collaborate with activities begin supported by other adaptation funds. If yes, please select below

Green Climate Fund **false**	Adaptation Fund **false**	Pilot Program for Climate Resilience (PPCR) **false**

This Project has an urban focus.

true

This project will directly engage local communities in project design and implementation

true

This project will support South-South knowledge exchange

true

This Project covers the following sector(s)[the total should be 100%]: *

Agriculture	0.00%
Nature-based management	20.00%
Climate information services	0.00%
Coastal zone management	0.00%
Water resources management	80.00%
Disaster risk management	0.00%

Other infrastructure	0.00%
Tourism	0.00%
Health	0.00%
Other (Please specify comments)	0.00%
Total	100.00%

This Project targets the following Climate change Exacerbated/introduced challenges:*

Sea level rise **false**	Change in mean temperature **false**	Increased climatic variability **true**	Natural hazards **true**
Land degradation **true**	Coastal and/or Coral reef degradation **false**	Groundwater quality/quantity **true**	

CORE INDICATORS – LDCF

	Total	Male	Female	% for Women
CORE INDICATOR 1 Total number of direct beneficiaries	95,395	47,221.00	48,174.00	50.50%
CORE INDICATOR 2 (a) Area of land managed for climate resilience (ha) (b) Coastal and marine area managed for climate resilience (ha)	400.00 0.00			
CORE INDICATOR 3 Number of policies/plans/ frameworks/institutions for to strengthen climate adaptation	3.00			
CORE INDICATOR 4 Number of people trained or with awareness raised	502	248.00	254.00	50.60%
CORE INDICATOR 5 Number of private sector enterprises engaged in climate change adaptation and resilience action	28.00			

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Moderate	The country is characterized by a climate that portrays frequent and intense rainfall. This could lead to (1) stopping construction activities for some extended time during the day in rainy periods or (2) destroy concrete that had not yet set. The first aspect could lead to project delays and the second could increase the relative costs. To mitigate these risks, the project team will (1) construct temporary shades to allow working during the rainy times and (2) ensure the freshly poured concrete is properly covered for at least 3 days. The residual risk will then be low.

Environmental and Social	Substantial	Eight potential risks have been identified for this project, one of which are assessed as SUBSTANTIAL, six as MODERATE and one as LOW. As a result, this project is rated overall as a SUBSTANTIAL Risk project. Most of the risk are associated with a specific set out Outputs (3.1, 3.2 and 4.2), all of which are noncomplex interventions for which, adequate mitigation measure can be put in place to reduce either its likelihood and/or its impact. During the PPG, an ESMF, Stakeholder Engagement Plan and Gender Action Plan shall be prepared to ensure compliance with the SES requirements ensuring that gender-related actions are adequately budgeted, monitored and reported on. During project implementation, site-specific (or clustered) ESMPs will be prepared for each pilot intervention area. The ESMP will include an Occupational Health and Safety Plans, Pollution Prevention and Management Plan, Waste Management Plan, and Traffic Management Plan (when appropriate), as well as any other plans required for SES compliance including potentially a Livelihoods Restoration Plan. These plans will be developed and put in place prior to commencement of the pilot demonstrations and disposal activities. The residual risk will then be low.
Political and Governance	Moderate	Lack of political support to the implementation / operationalization of leading policies, strategies, and plans (existing and new to be developed by the project. Despite the existing limitation in the implementation of such political decision, there is an increased pressure by local population to address these issues. Additionally, the problems to be addressed by the project constitute a recognized barrier to the economic and social development of the country, including in leading areas such as the promoting of Tourism, foreign investment, and the valorization of natural resources as one of the key pillars of sustainable development strategy. Mitigation: The project implementation team will maintain a close collaboration with national and regional policy makers. Also, the projects foresee the design and implementation of advocacy and awareness raising initiatives specially targeting this group, to foster their collaboration and support. The residual risk will then be low.
INNOVATION		
Institutional and Policy	Moderate	The project is expected to facilitate the review of the legal and institutional framework for climate resilient water, drainage and waste management. By doing so, there is a risk that some stakeholders would be concerned whether a holistic approach to the issue would affect their power balance, thus they would tend to resist the changes brought by the project. As a MITIGATION measure, the project also plans to include sensitizations, including for decision makers. The residual risk will then be low.
Technological	Moderate	The project will bring an innovative approach that combines nature-based solutions upstream the watersheds and drainage infrastructure development downstream. This combination requires a shift of mindest

		from some stakeholders in the country whether they are proponents of purely infrastructure solutions or nature-based solutions. As a MITIGATION measure, the project will sensitize on the benefits of the combined approach during the in-depth consultations during the design phase. The residual risk will then be low.
Financial and Business Model	Moderate	The country is a SIDS, thus heavily dependent on marine imports. This is likely to lead to affect the cost of materials. Thus, a contingency will be applied to costs of materials. The residual risk will then be low.
EXECUTION		
Capacity	Substantial	The Executing Entity's capacity was found ineffective for a full National Implementation Modality (NIM), because the HACT micro-evaluation rated them at "significant" overall risk level. As a mitigation measure, during the PPG stage, reviews and consultations will be further conducted, including with governmental and non-governmental partners operating in Sao Tome and Principe as well as the GEF Secretariat, in order to ensure an effective mitigation of this risk and to keep the related residual risk within acceptable levels.
Fiduciary	Low	This risk will be managed by identifying, during the PPG phase, the capacity building needs and other solutions to manage this risk.
Stakeholder	Low	This risk is unlikely (although it could have a high impact), as proper consultations were conducted during PIF development and further consultations are planned during subsequent stages.
Other		N/A
Overall Risk Rating	Substantial	Measures will be put in place to mitigate the risks identified above. As a consequence, and as suggested by the GEF TM to rather reflect the residual risk, it is important to note that, while the inherent overall risk rating was "substantial", the residual risk is low for this project with the established mitigation measures.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Describe how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how. (max. 500 words, approximately 1 page)

The proposed project is clearly aligned within the priority themes identified as a priority for LCDF under the GEF-8 Period [1][5].

First and foremost, the project falls within the water theme (2) focusing on promoting Integrated **water resources management** (IWRM) as an overarching approach to increase the resilience of water resources in Sao Tomé and Principe. To achieve this the project will:

- 1.1. Review and operationalize the legal and institutional framework, contributing towards a better integration of water, drainage and waste management (Outputs 1.1);
- 1.2. Advocacy, training and awareness raising for policy makers, technical staff and communities to support flood prevention and adaptation (Outputs 1.2) and upscaling IWRM and resilient city planning (Outputs 2.2);
- 2.1. Promote a coordination system for information driven integrated planning, budgeting and implementation of the water and waste sectors;
- Improve aquifer recharge to reduce rainwater runoffs upstream (Outputs 3.1) and implement priority drainage works in the main urban areas, downstream (Outputs 3.2), while reduce water quality risk through improved monitoring and effective waste collection (Outcome 4).

This approach is well rooted on nationally policies, strategies, and plan for the water sector, notably the water law (2018), the National Participatory Water and Sanitation Strategy (EPAS, 2021), the Implementation Plan for the Integrated Water Resources Management (2020) and the National Environmental Sanitation Strategy and Action plan (ENPASA, 2022-2030), serving as the implementation tool for National Environmental Sanitation Policy (PNSA, 2018). The proposed project aims therefore to address the identified limitations than hamper the country's institutional, operational, and technical capacity to operationalize the goals identified in such sector documents. The need for adequate assessment, planning and management of the water resources, is also identified among the priority action in the country0's NAPA (2006).

Likewise, the proposed action in this project to address waste management, to reduce water quality and destruction of drainage infrastructure, is also among the priority adaptation measure identified I the NDC 2021.

Additionally, while intervening in upstream section of the watershed to use **Nature based solutions** (priority theme 3) to increase aquifer recharge and reduce surface water runoff and solid erosion (Output 3.1), the proposed project is also contributing to the ecosystems management and livelihood pertained under the **Agriculture, Food Security and Health** priority theme (1). This is also aligned with the country's strategy for forestry and biodiversity, the NAPA (2006), as well as the priority adaptation measures identified in the NDC (2021), and in the Climate Action Enhancement Package (CAET, 2020).

Finally, the project will further address **nature-based solution** (NBS), by promoting a technical study for the construction of a NBS Wastewater treatment facility in the city of São Tomé. The need for ensuring an adequate disposal of wastewater is identified in PNOT and PDAG (2019), to reduce environmental impact of in highly populated areas, which contribute for ecosystem degradation. The proponents identify the current LDCF project as an opportunity to have a technical and scientific base to determine the feasibility of a NBS instead of grey infrastructure, hence aiming to driving innovation and a transformational process in the adaptation to climate change in São Tomé and Principe.

[1] GEF Programming Strategy on adaptation to climate change for the Least Developed Countries Fund and Special Climate Change Fund for the GEF-0 period of July 1, 2022, to Hine 30, 2026

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during PIF development as required per GEF policy, their relevant roles to project outcomes and plan to develop a Stakeholder Engagement Plan before CEO endorsement has been clearly articulated in the Project Description (Section B).

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities: Yes

Civil Society Organizations: Yes

Private Sector: Yes

Provide a brief summary and list of names and dates of consultations

The Project Identification Form (PIF) development included extended stakeholder engagements with representatives from the public sector, civil society, both in person and online. An in-country mission was held in January 2024 by international and national project development consultants and representatives from UNDP São Tomé and Principe. This mission engaged with stakeholders from national and regional authorities, to collect and analyze the current situation of Integrated Water Resources management in the country and understating the key vulnerabilities to climate change impacts. Further from several bilateral meetings, a ***consultation workshop*** was organized on January 17, 2024, with the participation of national public institutions, civil society organization, and development partners (Workshop Outputs in Annex).

Following the mission, virtual consultations were held with representatives DGACC and UNDP for further project validation.

In mid-February, 24 a series of interviews with local stakeholder was carried out (see Report of Interviews in Annex), with local businesses, institutions and communities that are often affected by floods in the city of São Tomé.

The table below list the names and dates of consultations.

Type of stakeholder engaged	Stakeholder(s) [1][6]	Date consulted

National Government	**Directorate of Environment and Climate Action (DAAC)*** DAAC will be the national executing partner. They were consulted to gather their views of the project, how it aligns with their strategic goals and ways in which they will support it further.	Jan 11 (online), 15, 2024, and Workshop
Development Partner	**United Nations Development Program (UNDP)*** UNDP will be the GEF Agency for this project. UNDP was consulted considering its relatively well established presence in the country to gather their views on the project, identify key stakeholders and help assessing current needs.	Jan 11, 12 (online), 15, 19, 2024 and Workshop
Development Partner	**National Adaptation Plan - United Nations Environment Programme (NAP-UNEP)** Consulted to collect baseline information and promote synergies with the project that is working on the NAP.	Jan 12, 2024 (online) and Workshop
Development Partner	**United Nations Human Settlements Programme (UN-habitat)** Consulted to collect baseline information from previous projects addressing drainage and flood management and identify possible technical inputs to be provided during project implementation.	Jan 15, 2024, and Workshop
National Government	**General Directorate of Natural Resources and Energy (DGRNE)*** Consulted to gather their views of the project, how it aligns with their strategic goals, notably on the promotion of IWRM and ways in which they will support it further.	Jan 15,2024, and Workshop
National Government	**National Water Institute (INA)*** Consulted to gather their views of the project, how it aligns with their strategic goals, notably on the promotion of IWRM and ways in which they will support it further.	Jan 15, 2024, and Workshop
National Government	**Directorate of Planning** Consulted to collect information and ensure the project aligns with national strategic objectives and priorities for national development.	Jan 15, 2024
Public institute	**São Tomé and Príncipe Civil Engineering Laboratory (LECTSP)*** Have relevant technical capacity to oversee construction of infrastructure in the county, were consulted to explore potential role in this domain.	Jan 15, 2024
National Government	**Directorate of Agriculture** Were consulted to collect insights on impact of climate change in the sector and explore potential collaboration in the implementation phase.	Jan 16, 2024, and Workshop
National Government	**Directorate of Land Affairs** Consulted to identify challenges and opportunities to intervene in rural areas.	Jan 16, 2024
Public institute	**National Meteorology Institute (INM)*** Consulted to collect baseline information on meteorological and climate and identify possible technical inputs to be provided during project implementation.	Jan 16, 2024, and Workshop
Development Partner	**Food and Agriculture Organization (FAO)** Consulted to collect information from the organization's experience implementing projects in rural areas, often affected by floods.	Jan 16, 2024
National Government	**Directorate of Forests and Biodiversity (DFB)*** Consulted to gather their views of the project, how it aligns with their strategic goals, notably on the promotion forest conservation and restauration, and to identify ways in which they can contribute for project implementation.	Jan 16, 2024, and Workshop
Local Government	**Água Grande District Council (CDA)*** Consulted to collect their views on the impact of floods in the city and main	Jan 16, 2024 and Workshop

	priorities for intervention, as well as on the situation of waste management under the direct responsibility of CDA. Also to explore potential collaboration in the implementation phase.	
Military institution	**Coast Guard** Consulted to understand their role in coastal protection and intervention in floods and disaster relief.	Jan 16, 2024, and Workshop
Civil Society	**São Tomé and Príncipe National Water Partnership (PNA-STP)*** Consulted to collect insights into the experience on community-based projects dealing with the promotion of IWRM, and explore potential collaboration in the implementation phase.	Jan 16, 2024, and Workshop
Public Company	**Water and Electricity Company (EMAE)*** Consulted to gather their views of the project, how it aligns with their strategic goals, notably on the promotion water security, and to identify ways in which they can contribute for project implementation.	Jan 16, 2024
Public institute	**National Roads Institute (INAE)*** Consulted to gather their views of the project, how it aligns with their strategic goals, notably concerning the priorities in the rehabilitation of drainage systems, and to identify ways in which they can contribute for project implementation.	Jan 18, 2024
Project Unit	**WACA Project National coordination Unit** Consulted to collect their views on the project, share information and explore potential synergies and complementarities in the implementation phase.	Jan 19, 2024
Regional Government	**Regional Secretariat for Infrastructure, Public Works and Territorial Planning (SRIOOT)*** They were consulted to gather their views of the project, collect insights into the impacts of floods in Principe's infrastructure and explore ways in which they will support it further.	Jan 19, 2024 (online)
National Government	**Directorate of Economy (Tourism)** Consulted to gather their views of the project, collect insights into the impacts of floods in the tourism sector.	Workshop
National Government	**National Committee for Prevention and Response to Disasters (CONPREC) *** They were consulted to gather their views of the project, collect insights into the impacts of floods and explore ways in which they will support it further.	
Civil Society	**OIKOS** Consulted to collect insights into the experience on community-based environmental projects and explore potential collaboration in the implementation phase.	Workshop
Civil Society	**National Civil Protection and Fire Service (SNPCB)** They were consulted to gather their views of the project, collect insights into the impacts of floods and explore ways in which they will support it further.	Workshop
Civil Society / Local Community	**Interview with private formal and inform business and local communities** Consulted to collect information on citizens' and business' views on the impacts of floods and the perceived priorities for action.	Feb 14, 15 and 16 2024

During the PPG phase, additional stakeholder engagements will be required, leading to the preparation of a stakeholder assessment and engagement plan, as well as Environmental and Social Management Framework (ESMF) and a Gender Analysis and Action Plan, in line with GEF and UNDP requirements to uphold social and environmental safeguards. The need for a Livelihood Action Plan will be explored and confirmed during the preparation of the ESMF.

[1] * Acronym in Portuguese

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in the section B project description?

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
High or Substantial			

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

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

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant($)	Agency Fee($)	Total GEF Financing ($)
UNDP	LDCF	Sao Tome and Principe	Climate Change	LDCF Country allocation	Grant	5,329,452.00	506,298.00	5,835,750.00

Total GEF Resources ($)		**5,329,452.00**	**506,298.00**	**5,835,750.00**

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount ($)

150000

PPG Agency Fee ($)

14250

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	PPG($)	Agency Fee($)	Total PPG Funding($)
UNDP	LDCF	Sao Tome and Principe	Climate Change	LDCF Country allocation	Grant	150,000.00	14,250.00	164,250.00
Total PPG Amount ($)						**150,000.00**	**14,250.00**	**164,250.00**

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total($)
Total GEF Resources					**0.00**

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing($)	Co-financing($)
CCA-1-1	LDCF	5,329,452.00	24197990
Total Project Cost		**5,329,452.00**	**24,197,990.00**

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Environment	In-kind	Recurrent expenditures	117990

Donor Agency	World Bank	Grant	Investment mobilized	24000000
GEF Agency	UNDP	Grant	Investment mobilized	80000
Total Co-financing				**24,197,990.00**

Describe how any "Investment Mobilized" was identified

The World Bank is currently financing the implementation of the STP Coastal Areas Resilience and Sustainable Tourism Project (WACA+), carried out several studies and works for the improvement of drainage and costal protection in 12 communities around the country. UNDP will use its TRAC resources to co-finance the project and the Government will provide in-kind co-financing. More co-financing will be explored during the PPG phase.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	UNDP	4/24/2024	Nancy Bennet		nancy.bennet@undp.org
Project Coordinator	UNDP	4/24/2024	Mulengera Bahal'okwibale		mulengera.bahalokwibale@undp.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Name	Position	Ministry	Date (MM/DD/YYYY)
Darnel Hélio de Sousa Baia	Director of Conservation, Sanitation and Environmental Quality, Directorate of Environment and Climate Action	Ministry of Environment	4/17/2024

ANNEX C: PROJECT LOCATION

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

Located at the cross line of the Equator, in the Gulf of Guinea, about 380 km west of the coast of the African Continent, São Tomé and Príncipe is a Small Island Developing State (SIDS), of about 1,000 km2, located in the Gulf of Guinea, off the western equatorial coast of Central Africa, boasting pristine natural wealth and a large exclusive economic zone, approximately 160 times larger than the archipelago, that is a marine biodiversity hotspot.

The country with a total area of approximately 1,001 square kilometers, comprises two main islands, São Tomé (854km2) and Príncipe (147km2), along with several smaller islets, and is divided into six administrative districts Água Grande (where the capital city of São Tomé is located), Cantagalo, Caué, Lembá, Lobata, and Mé-Zóchi - (Figure 15) and the Autonomous Region of Principe (Região Autónoma do Príncipe- RAP), with the main city being Santo António (Figure 16[1][7]).

Figure 17 Location and Map of São Tomé and Principe

The interventions will take place in:

Água Grande district (6043' E; 0021' N), including the city of São Tomé and the upstream areas of the watersheds that feed into Água Grande. This watershed area can be seen in Figure 18, represented in white, Southeast River Diogo Martins (11) and North of River Mário Jorge (2) – estimated area of 7000 hectares, i.e. ~70 km2);

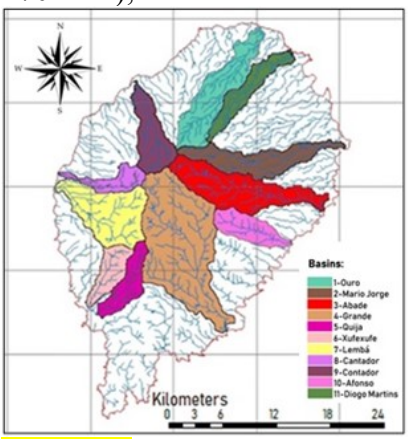

Figure 18 Main River basins and watershed in São Tomé

Autonomous Region of Príncipe (7o25' 15''E; 1o38'15'' N) with a total area of (147km2), notably the city of Santo António and the upstream areas of River Papagaio (in red in Figure 19) – estimated total area of 20 km2). The average annual runoff of the Papagaio Basin is estimated at 21 hm3 (Basin Plan, 2021), with a tendency for surface and rapid runoff to occur with relatively low storage in aquifers. Deforestation and sanitation limitations, particularly at the river mouth, have been identified as relevant causes of water quality degradation.

Figure 19. Main River basins in Príncipe

Population and Demography

Estimates for 2023, indicate that São Tomé and Príncipe has total population of 223. 648 inhabitants, with a projected increase to 284.293 inhabitants by 2035 [2][8]. The country has a young and increasingly educated population, with about half of the population being under 18 years old, with a secondary school enrollment rate of 89%.

Urbanization has been on the rise, reflecting ongoing demographic trends, with about 76% of the total population living in urban area and projected to reach 85% by 2050 (Figure 20)[3][9].

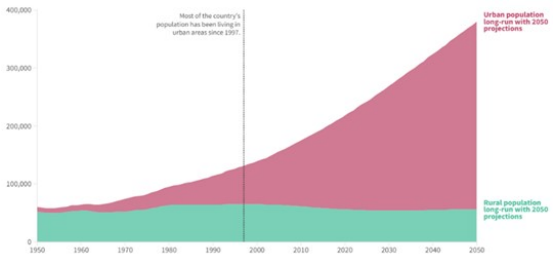

Figure 20 Projection for urban and rural population in São Tomé and Príncipe

The capital city of São Tomé is the main and most populated urban area in São Tomé and Príncipe. The Água Grande District (where the capital city of São Tomé is located) is estimated to have 86.054 inhabitants (2023), corresponding to 38,5% of the country's total population. The district's population is forecasted to increase to 109.355 by 2035.

The Autonomous Region of Principe (RAP) has a total of 9.341 inhabitants with a projected increase to 11.881 inhabitants in 2035 [4][10].

Economy

Economically, São Tomé and Príncipe faces structural challenges, typical of small, remote countries, with a GDP heavily dependent on agriculture, particularly cocoa production. Current GDP stand at ~US$1 billion

(PPP) with an average annual GDP growth of 2,7% (2014-2023, IMF). According to the most recent poverty information available (2017), 44.8 percent of the population was living on less than $3.65 per day (PPP terms), the international poverty line used for lower-middle income countries like São Tomé and Príncipe. This includes the 15.6 percent of the population living on less than $2.15 per day (PPP terms), the international poverty line [5][11] .

Over the last decade, the economic performance has also made relevant progress, with GDP increasing from $1,130 in 2010 to $2,449 per capita in 2021[6][12], which is considered a middle-income country.

Despite the country's timid progress in diversifying its economy, notably with investments in tourism and oil exploration, São Tomé and Príncipe remains highly dependent on imports and international development aid, constrained by remoteness, with a small private sector, limited institutional capacity, and low human capital. It is also heavily exposed to shocks, including those related to climate change, as well as price shocks.

Social and Gender dynamics

The Human Development Index (HDI) of São Tomé and Príncipe rose from 0.56 to 0.62 between 2010 and 2021, placing the country close to the average for countries in the medium human development group (0.63) [7][13]

According to the 2021-22 Gender Inequality Index (GII), São Tomé and Príncipe ranked at 124th position out of 162 countries. With a female HDI value of 0.584, compared with 0.643 for men, the Gender Development Index (GDI) reached a value of 0.907. While this is above the Sub-Saharan average, it's below the GDI of peer country such as Cabo Verde.

This reflects disparities in access to work, health, and education between men and women. Women in São Tomé and Príncipe face challenges in accessing employment opportunities and health services, contributing to gender-based disparities in life expectancy and literacy rates. Women have a lower labor force participation than men (41.4% women/74.4% men)[8][14] . Unemployment is estimated at 13.6% and heavily affecting the younger population (60% of unemployed are under 35), and highly unbalanced in terms of gender, with recent data showing that for every 69 unemployed men there are 100 unemployed women. According to national statistics, women have less access to employment than men, and for every 162 employed men there are only 100 women. Overall, there is still a significant gender segregation in relation to professional activities.

Data on the main work activities of men and women indicate that men are often engaged in agriculture and related sectors, while women are involved in a range of activities, including informal sectors and household responsibilities. Efforts are being made to address gender disparities and promote gender equality through various initiatives and policies in São Tomé and Príncipe.

Recent modifications in Portugal's migration policy, favoring visa for Portuguese speaking nationalities, have led to an unprecedented flow of migration. The UNDP's Preliminary Assessment (September 2023) confirmed that, in the last couple of years, around 10% of the population left the country, mostly the skilled and young.

Flood Risk

Recent studies on Flood risks in São Tomé and Principe, highlight the country's vulnerability, which is especially prevalent in the Água Grande District having the highest Total Flood Risk due to foreseen impact on the Population, Buildings and Tourism sector (Figure 21).

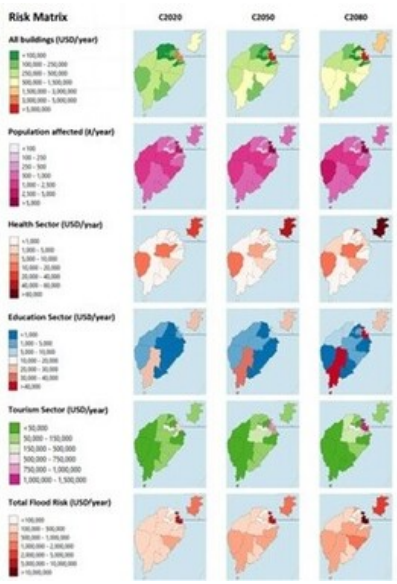

Figure 21. Overview risk maps for buildings, healthcare facilities, education sector, tourism sector and total flood risk under present and future climate (2050 ad 2080) conditions

Sector Stakeholders

The DAAC will be the National Implementation Entity, with the support of an entity that will be identified during PPG Stage.

-
    - **Directorate of Environment and Climate Action (DAAC):** According with the provisions of article 130 (2) of Decree-Law No. 5/2023 on the Organization of the XVIII Constitutional Government, the DAAC it is a central body of the State apparatus that is under the supervision of the Ministry of Infrastructure, Natural Resources and the Environment and is responsible for defining and participating in the execution of State policy in matters of the environment and bringing together efforts to preserve ecosystems. and the longevity of species and life on Earth. DGAAC has been coordinating and supporting the implementation of several projects linked to sanitation, water, waste and climate change.

Additionally, the project will engage directly with a series of partners, which were consulted during PIF formulation, that will contribute to a sound project delivery, in line with a IWRM approach, that entails a cross cutting approach to water resources. This includes:

- **Line Ministries, including Ministry of Environment, Ministry of Infrastructure and Natural Resources and Ministry of Finances** – These are three main ministries that hold direct technical and financial responsibilities regarding climate action, management of natural resources (including water and forests), as well as main infrastructures such as drainage systems and the financial contribution of the Government of São Tomé and Principe. During project implementation there will be a direct engagement to raise awareness and strengthen political support for the implementation of actions and mobilization of resources contributing for an IWRM (Output 1.1).
- **General Directorate of Natural Resources and Energy (DGRNE):** the DGRNE, under the Ministry of Infrastructure and Natural Resources is the body through which the State exercises its policy for natural resources and energy and consists of three technical directions. The entire planning process, availability studies (quantity and quality) and evaluation of resource parameters are relevant in the field of activity of this department, which works in conjunction with the National Water Institute (INA), Directorate of Environment and Climate Action (DACC) and other sectors. Their duties are aligned with the objectives of this project. During project implementation will play an active role in the review and operationalization of the legal and institutional framework towards a better integration of water, drainage, and waste management (Output 1.1) and the preparation of the Watershed Management Plans for Agua Grande (Output 2.1).
- **National Water Institute (INA):** According to the article 128 (j) of Decree-Law No. 5/2023 on the Organization of the XVIII Constitutional Government, the INA is a public entity that is under the supervision of the Ministry of Infrastructure and Natural Resources and is assigned to develop water resources policy, an aspect that is aligned with the objectives of the project focused on controlling the quantity and quality of water, as well as implementing integrated water resources management (IWRM). During project implementation will play an active role in the review and operationalization of the legal and institutional framework towards a better integration of water, drainage, and waste management (Output 1.1) and the preparation of the Watershed Management Plans for Agua Grande (Output 2.1).
- **National Roads Institute (INAE):** The INAE is an entity responsible for developing the construction and maintenance policy for roads and drainage, under the Ministry of Infrastructure and Natural Resources. The role of this institution is extremely important in this project. During project implementation will play an active role in the definition and implementation of priority drainage works in the main urban areas (Output 3.2).
- **Directorate of Forests and Biodiversity (DFB):** The DFB is a public institution that is under the supervision of the Ministry of Agriculture, Rural Development and Fisheries and is responsible for execution of approved policies in the field of forestry promotion and biodiversity, inspection, statistics and promotion of the timber and non-timber forest products industry and for the coordination of the activities of the Obô Natural Park of São Tomé (PNOST). DFB must submit to the Council of Ministers through the competent Ministry the forestry policy guidelines in line with the country's other sectoral policies. Considering that in recent years the indiscriminate chopping of trees has increased, with a significant negative impact in environmental and economic terms, reforestation activities have been one of the actions developed by the institution with a view to combating deforestation and consequently the impact of climate change, especially in river basins, cities, green and social areas. This aspect is aligned with one of the objectives of this project. During project implementation will play an active role in defining and implementing NBS to promote aquifer recharge and reduce run-off in Agua Grande Watershed (Output 3.1).
- **Regional Secretariat for Infrastructure, Public Works and Territorial Planning (SRIOOT):** The SRIOOT is a public institution under the supervision of the Regional Government of Principe whose mission is to develop and implement policies linked to infrastructure, public works and territorial planning. It coordinates municipal services, which work on issues related to infrastructure, water, and environmental sanitation. The monitoring of available water resources, accessibility of this resource, the promotion of a change in behavior in water and waste management, as well as the management of water infrastructures, associated with drainage structures distributed throughout the

region that already require intervention with a view to mitigate the impacts of climate change. These functions are aligned with this project. During project implementation will play an active role in defining and implementing NBS to promote aquifer recharge and reduce run-off in Agua Grande Watershed (Output 3.1).

- **Regional Directorate for the Environment and Nature Conservation:** The DGECN, under the supervision of the Regional Government has the mission of developing and implementing environmental and nature conservation policies in the regional territory. Monitoring studies, reviewing, and approving them, as well as strengthening institutional and organizational capabilities with the improvement of the institutional framework, legal and regulatory framework of the sanitation sector, are aligned with the objectives of the project aiming to meet the challenges inherent to the problem of climate change. During project implementation will play an active role support DGAC and LNESTP in the operationalization of water quality monitoring plan in river basins of Santo António (Output 4.1).
- **Água Grande District Council (CDAG):** The Água Grande District Council is the local governmental body that represents a part of the national territory, is under the supervision of the Ministry of Defense and Internal Order in accordance with Decree Law No. 5/2023 on the Organization of the XVIII Constitutional Government and its attribution is to implement economic, social and environmental policies in the district with particular attention to waste management, sanitation, public lighting and collaborate with the Central Government in the management of resources and state heritage, within its jurisdiction. This entity has already developed several projects linked to sanitation (urban solid waste) with financing from partners. Their concern regarding the evidence of the impact of climate change, with the accumulation of water on roads and streets, resulting from the insufficient and obsolete drainage system, is an aspect linked to the objectives of the project. During project implementation will play an active role in the implement a sustainable waste management system in the city of São Tomé (Output 4.2), including the participation in the technical studies and preparation of specifications for the construction of a controlled landfill in Agua Grande. Participation in the preparation of the structuring plan of the priority areas targeted for drainage works intervention in the city of São Tomé (Outputs 3.2).
- **São Tomé and Príncipe Civil Engineering Laboratory (LECSTP):** The Civil Engineering Laboratory of São Tomé and Príncipe (LECSTP), is a public institution endowed with administrative, financial and patrimonial autonomy through Decree-Law 31/2000, published in the Official Gazette No. 9 of December 28, 2000 and is under the supervision of the Ministry of Infrastructure and Natural Resources (MIRN), which is the body of the Central State Administration responsible for the design, execution, coordination and evaluation of the policy defined and approved by the Council of Ministers for the areas of infrastructure and natural resources and civil construction. The laboratory's fundamental objective in carrying out its activity is research and quality control of materials to be applied in civil construction works. Considering its field of action, this institution will be able to contribute significantly to the verification of the necessary geotechnical parameters in the studies and implementation of drainage works, collaboration in the analysis of water quality aligned with the project objectives to safeguard the quality and the sustainability of interventions. During project implementation will play an active role in setting up and operating a control system for monitoring of water quality in river basins of Água Grande and Santo António (Output 4.1), including operationalization of water quality monitoring plan and participating in the technical studies for the construction of a Nature based wastewater treatment facility in the city of São Tomé.
- **Water and Electricity Company (EMAE):** The Water and Electricity Company is a public entity, under the supervision of the Ministry of Infrastructure and Natural Resources, whose responsibility is to implement policies linked to water and energy, promoting a higher rate of coverage and distribution to the population. Its Water Department has a laboratory with the capacity to carry out physical-chemical and microbiological analyses of water for human consumption and has been developing ideas for possible strategies that can reduce losses, make more efficient use of water,

improve the collection system, treatment, storage and distribution of water and consequently cost reduction. These aspects are aligned with the objectives of the project, which is focused on the perspective of Integrated Water Resources Management and reducing vulnerability to the impacts of climate change. During project implementation will play an active role in installing Water meter in water spring. Collecting and sharing data with DAAC and INA, contributing for monitoring of water resources (Output 2.1).

- **National Committee for Prevention and Response to Disasters (CONPREC):** CONPREC is the high-level council charged with coordinating disaster risk management. It has its headquarters in the Ministry of Defense and Internal Administration and was created in 2011 by Decree-Law No. 17/2011 to respond to questions related to natural and man-made disasters. It is chaired by the President of the Democratic Republic of São Tomé and Príncipe, Prime Minister, and members of the Civil Protection and Fire Brigade, Social Protection Directorate, Coast Guard, Directorate of Environment, Red Cross, Public Health Directorate, Institute of Meteorology, Police and National Army and Directorate of Foreign Affairs of the Ministry of Foreign Affairs. CONPREC does not have authority over other related institutions to fully exercise the coordination of national disaster risk management. According to the national disaster risk management strategy published in 2016, São Tomé and Príncipe is particularly vulnerable to the natural risks of coastal and river flooding. Most of the time, floods and severe storms come with hail, thunder, lightning, and violent winds. The convergence of these hazards resulted in widespread flooding in coastal communities that destroyed homes and caused loss of life. Flooding in São Tomé and Príncipe is caused by flash floods following heavy rain. This occurs mainly along the coast and its rivers.
- **National Committee for Climate Change (CNMC):** The CNMC is an inter-ministerial body with the remit of a National Designated Authority, created through Decree nº 13/2012, is responsible for the coordination, monitoring and evaluation of the different activities (programs and projects) to be developed within the context of the United Nations Framework Convention on Climate Change (UNFCCC) implementation. The CNMC was created to raise awareness of the various São Santomean agents in matters related to climate change, including policies and measures that promote or result in the reduction of greenhouse gas emissions, as well as measures that reduce the vulnerability of São Tomé and Príncipe's economy and populations, increasing their resilience and adapting them to the impacts of climate change. The CNMC is a body for consultation, training, awareness, facilitation in the design, financing, implementation, validation and monitoring of the various activities (programs and projects) that are developed as part of the implementation of the UNFCCC, ensuring consistency with national priorities in relation to climate change, both at the adaptation and mitigation level. During project implementation will play an active role in development and dissemination of targeted contents and dissemination initiatives for key stakeholders - policy makers, technical staff and citizens, promoting awareness and actions for adaption to climate change (Output 5.1).
- The National Institute for the Promotion of Gender Equality and Equity (INPG), under the Ministry of Health and Women's Rights of São Tomé and Príncipe is responsible for the promotion of gender equality and equity. INPG will contribute to the Legal and institutional framework reviewed and operationalized (Output 1.1), the Advocacy, training and awareness raising activities (Output 1.2), the training of national and regional administration on IWRM and climate-resilient city planning (Output 2.2), as well as the Knowledge management and dissemination activities (Output 6.1).
- **Federation of Non-Governmental Organizations of São Tomé and Príncipe (FONG-STP):** Is an organization that seeks to be representative of the NGOs affiliated with it, to be credible and a reference for them, development partners and civil society in general. This organization has been coordinating and supporting the implementation of several projects linked to training members and civil society in matters of citizenship, institutional and organizational strengthening, sanitation, water and adaptation to climate change. During project implementation will play an active role in development and dissemination of targeted contents and dissemination initiatives for key

stakeholders - policy makers, technical staff and citizens, promoting awareness and actions for adaption to climate change (Output 5.1).

- Civil Society Organization (CSO) play a key role in areas such as forest conservation, water quality, waste management, and support to vulnerable groups **and communities.** CSO along with local communities will be involved in the delivery of specific tasks such as defining and implementing NBS to promote aquifer recharge and reduce run-off in Agua Grande Watershed (Output 3.1) engagement with beneficiaries and vulnerable groups impacted by drainage works intervention in the city of São Tomé (Outputs 3.2) and the implementation of a sustainable waste management system in the city of São Tomé (Output 4.2).

- **UN-Habitat:** This UN Agency has carried out several initiatives to support city planning including the identification of priority intervention areas to contain the impact of floods, notably in the city of São Tomé (implementation of CityRAP, 2017). During project implementation will play an active role in definition and implementation of priority drainage works in the main urban areas (Output 3.2)

[1] Source: https://www.worldometers.info/maps/sao-tome-and-principe-map/

[2] *Demographic projections for São Tomé and Principe for 2035, based on the results of the 20212 Census*. INA and UNFPA, 2015. https://www.stpdados.info/sites/default/files/2022-03/Publicac%CC%A7%E2%95%9Eo%20sobre%20Projecc%CC%A7%CE%A3es%20Demogra%CC%81ficas%202012-2035%20%283%29.pdf

[3] Estimated total population for 2023, based population statistics data from the national censuses and international organizations such as the United Nations and the World Bank.

[4] *Demographic projections for São Tomé and Principe for 2035, based on the results of the 20212 Census*. INA and UNFPA, 2015.

[5] World Bank, Poverty & Equity Brief Sao, Tome and Principe, October 2023

[6] World Bank data. https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=ST

[7] United Nation's Common Country Analysis, 2022. https://saotomeeprincipe.un.org/sites/default/files/2023-02/CCA%20STP_%20FINAL%20OK_0.pdf

[8] United Nation's Common Country Analysis, 2022. https://saotomeeprincipe.un.org/sites/default/files/2023-02/CCA%20STP_%20FINAL%20OK_0.pdfhttps://saotomeeprincipe.un.org/sites/default/files/2023-02/CCA%20STP_%20FINAL%20OK_0.pdf

[9] **Island insights: Surging Seas and Increasing Rains,** Analyzing Flood Risks in São Tomé e Príncipe, District by District, February 2024. Prepared under the WACA project - https://datacatalog.worldbank.org/search/dataset/0065823/S-o-Tom--e-Pr-ncipe-s-Flood-Risk-Study---WACA-STP-project- .

https://saotomeeprincipe.un.org/sites/default/files/2023-02/CCA%20STP_%20FINAL%20OK_0.pdf

ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

Title
GEF-8_PreSESP_WaterSecurity_and Floods_STP_Draft23Feb24

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation

No Contribution 0	Principal Objective 2	No Contribution 0	No Contribution 0

ANNEX F: TAXONOMY WORKSHEET

Level 1	Level 2	Level 3	Level 4
Influencing models			
	Strengthen institutional capacity and decision-making		
	Convene multi-stakeholder alliances		
	Demonstrate innovative approaches		
Stakeholders			
	Private Sector		
		Financial intermediaries and market facilitators	
		SMEs	
		Individuals/Entrepreneurs	
	Local Communities		
	Civil Society		
		Community Based Organization	
		Non-Governmental Organization	
	Type of Engagement		
		Information Dissemination	
		Partnership	
		Consultation	
		Participation	
	Communications		
		Awareness Raising	
		Education	
		Public Campaigns	
		Behavior Change	
Capacity, Knowledge and Research			
	Capacity Development		
	Knowledge Generation and Exchange		
	Learning		
		Theory of Change	
		Adaptive Management	
	Knowledge and Learning		
		Knowledge Management	
		Capacity Development	
		Learning	
	Stakeholder Engagement Plan		
Gender Equality			
	Gender Mainstreaming		
		Beneficiaries	
		Women groups	
		Sex-disaggregated indicators	
		Gender-sensitive indicators	
	Gender results areas		
		Access to benefits and services	
		Capacity development	
		Awareness raising	
		Knowledge generation	
Focal Areas/Theme			
	Integrated Programs		
		Sustainable Cities	
			Municipal waste management
			Green space

			Municipal Financing
			Urban Resilience
	Biodiversity		
		Protected Areas and Landscapes	
			Terrestrial Protected Areas
			Community Based Natural Resource Management
	Forests		
		Forest and Landscape Restoration	
		Forest	
			Congo
	International Waters		
		Freshwater	
			Aquifer
	Chemicals and Waste		
	Climate Change		
		Climate Change Adaptation	
			Least Developed Countries
			Small Island Developing States
			Disaster Risk Management
			Climate Resilience
			Climate information
			Ecosystem-based Adaptation
			Private Sector
			Livelihoods
		United Nations Framework on Climate Change	
			Nationally Determined Contribution