



GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

PROJECT TYPE: Medium-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

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PART I: PROJECT INFORMATION

Project Title: Strategic program to promote renewable energy and energy efficiency investments in the electricity sector of São Tomé and Príncipe			
Country(ies):	São Tomé and Príncipe	GEF Project ID: ¹	9897
GEF Agency(ies):	UNIDO (select) (select)	GEF Agency Project ID:	150124
Other Executing Partner(s):	Ministry of Infrastructure, Natural Resources and Environment (MIRNA), ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)	Submission Date:	10/30/2018
GEF Focal Area (s):	Climate Change	Project Duration (Months)	48
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>	Corporate Program: SGP <input type="checkbox"/>	
Name of Parent Program	[if applicable]	Agency Fee (\$)	149,679

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in \$)	
			GEF Project Financing	Co-financing
CCM-1: Promote Innovation, Technology Transfer, and Supportive Policies and Strategies Program 1: Promote the timely development, demonstration, and financing of low-carbon technologies and mitigation options	Outcome A. Accelerated adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration Outcome B. Policy, planning and regulatory frameworks foster accelerated low GHG development and emissions mitigation Outcome C. Financial mechanisms to support GHG reductions are demonstrated and operationalized	GEFTF	1,575,571	23,351,990
Total project costs			1,575,571	23,351,990

B. PROJECT DESCRIPTION SUMMARY

Project Objective: Enhanced GHG emission reduction and domestic value creation through the uptake of inclusive renewable energy and energy efficiency technology markets						
Project Components/Programs	Financing Type ³	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Confirmed Co-financing
1. Policy, legal and regulatory framework for sustainable energy	TA	Outcome 1: Accelerated RE&EE market development through improved policy and regulatory framework and effective public-private coordination	Output 1.1. Coherent national sustainable energy policies with RE&EE targets established and under implementation Output 1.2. Proposals for sustainable energy legislation, standards and a package of incentives	GEFTF	270,000	310,920

¹ Project ID number remains the same as the assigned PIF number.

² When completing Table A, refer to the excerpts on [GEF 6 Results Frameworks for GETF, LDCF and SCCF](#).

³ Financing type can be either investment or technical assistance.

			<p>developed, and their implementation facilitated</p> <p>Output 1.3. EE standards for electric appliances are developed and their implementation facilitated</p> <p>Output 1.4. Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration</p>			
2. Sustainable energy investment promotion	TA	Outcome 2: Increased investments in sustainable energy infrastructure and businesses	Output 2.1. The STP RE and EE Status Report and the GIS based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated	GEFTF	142,500	43,500
	Inv		Output 2.2. A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums	GEFTF	739,000	22,281,161
3. Qualification and certification framework for sustainable energy	TA	Outcome 3: Enhanced domestic public and private sector capacities to plan, implement, operate and innovate sustainable energy products and services in island contexts	<p>Output 3.1. Improved qualification, certification and accreditation framework on sustainable energy</p> <p>Output 3.2. Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas</p> <p>Output 3.3. On-line training program on sustainable energy</p>	GEFTF	215,410	311,529

			solutions for islands is developed in Portuguese and applied by capacity building institutions and experts in São Tomé and Príncipe, Cabo Verde and Guinea-Bissau Output 3.4. Capacity support is provided for the operationalization of the National RE Associations Output 3.5. At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on RE and EE issues Output 3.6. Improved capacities of key stakeholders through national and sub-regional trainings, by train-the trainer approaches and training missions			
Project monitoring and evaluation	TA	Outcome 4: Continuous monitoring and evaluation (M&E) of the implementation of the GEF project conducted in accordance with established GEF and UNIDO procedures and guidelines	Output 4.1. Mid-term review and terminal evaluation executed Output 4.2. Project's progress monitored, documented and recommended actions formulated	GEFTF	68,000	129,000
Subtotal					1,434,910	23,076,110
Project Management Cost (PMC) ⁴				(select)	140,661	275,880
Total project costs					1,575,571	23,351,990

C. CONFIRMED SOURCES OF [CO-FINANCING](#) FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for [co-financing](#) for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (\$)
Recipient Government	Ministry of Infrastructure, Natural Resources and Environment (MIRNA), Directorate General of Natural Resources and Energy (DGRNE)	In-kind	382,400
Recipient Government	Ministry of Infrastructure, Natural Resources and Environment (MIRNA), Directorate General of Natural Resources and Energy (DGRNE)	Grants	2,000,000

⁴ For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

Recipient Government	Ministry of Finance, Commerce and Blue Economy (MFCEA) with funding from the World Bank	Grants	5,000,000
Recipient Government	Ministry of Finance, Commerce and Blue Economy (MFCEA) with funding from the European Investment Bank (EIB)	Loans	2,000,000
CSO	Centre for Renewable Energy and Industrial Maintenance (CERMI)	In-kind	121,600
Others	ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)	In-kind	150,000
Others	ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)	Grants	300,000
Others	African Development Bank (AfDB)	Grants	1,000,000
Private Sector	Lusophone Renewable Energy Association (ALER)	Grants	57,690
Private Sector	Lusophone Renewable Energy Association (ALER)	In-kind	85,300
Private Sector	EDP Renováveis /Energias de Portugal, S.A.	Equity	12,000,000
GEF Agency	UNIDO	Grants	51,000
GEF Agency	UNIDO	In-Kind	204,000
Total Co-financing			23,351,990

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee ^{a)} (b) ²	Total (c)=a+b
UNIDO	GEF TF	São Tomé and Príncipe	Climate Change	(select as applicable)	1,575,571	149,679	1,725,250
Total Grant Resources					1,575,571	149,679	1,725,250

a) Refer to the Fee Policy for GEF Partner Agencies

E. PROJECT'S TARGET CONTRIBUTIONS TO GEF 6 CORE INDICATORS

Update the relevant sub-indicator values for this project using the methodologies indicated in the Core Indicator Worksheet (as used in GEF 7 Endorsement template – Annex E) and aggregating them in the table below. Progress in programming against these targets is updated at mid-term evaluation and at terminal evaluation. Achieved targets will be aggregated and reported any time during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCCF.

Project Core Indicators		Expected at CEO Endorsement
1	Terrestrial protected areas created or under improved management for conservation and sustainable use (Hectares)	
2	Marine protected areas created or under improved management for conservation and sustainable use (Hectares)	
3	Area of land restored (Hectares)	
4	Area of landscapes under improved practices (excluding protected areas)(Hectares)	
5	Area of marine habitat under improved practices (excluding protected areas) (Hectares)	
	Total area under improved management (Hectares)	
6	Greenhouse Gas Emissions Mitigated (metric tons of CO ₂ e)	<p><i>At least 1.83 million tons of CO₂e over projects lifetime:</i></p> <ul style="list-style-type: none"> • Direct: at least 312,598 metric tons of CO₂e • Indirect: at least 1,517,324 metric tons of CO₂e
7	Number of shared water ecosystems (fresh or marine) under new or improved cooperative management	
8	Globally over-exploited marine fisheries moved to more sustainable levels (metric tons)	
9	Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)	
10	Reduction, avoidance of emissions of POPs to air from point and non-point sources (grams of toxic equivalent gTEQ)	
11	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	<p>At least 75 participants participate in the online training programme: 25 women/50 men</p> <p>At least 100 key stakeholders are trained on sustainable energy issues by qualified trainers: 30 women/70 men</p>

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

F. PROJECT TAXONOMY

Please update the table below for the taxonomic information provided at PIF stage. Use the GEF Taxonomy Worksheet provided in Annex F to find the most relevant keywords/topics/themes that best describe the project.

The taxonomic information required for this project is provided in Annex F

Level 1	Level 2	Level 3	Level 4
Influencing Models	(multiple selection)	(multiple selection)	(multiple selection)
Stakeholders	(multiple selection)	(multiple selection)	(multiple selection)
Capacity, Knowledge and Research	(multiple selection)	(multiple selection)	(multiple selection)
Gender Equality	(multiple selection)	(multiple selection)	(multiple selection)
Focal Area/Theme	(multiple selection)	(multiple selection)	(multiple selection)
Rio Markers	(multiple selection)		

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF⁵

A.1. *Project Description*. Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area⁶ strategies, with a brief description of expected outcomes and components of the project, 4) [incremental/additional cost reasoning](#) and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and [co-financing](#); 5) [global environmental benefits](#) (GEFTF) and/or [adaptation benefits](#) (LDCF/SCCF); and 6) innovativeness, sustainability and potential for scaling up.

Approved PIF	CEO endorsement document
Limited contextual and background information was provided	Complementary information was incorporated on the context and background of the country with specific emphasis on available renewable energy (RE) sources, use of RE systems, energy efficiency (EE) involvement of the private sector in this market and the current political and macroeconomic situation of the country.
Other Executing Partners(s): Ministry of Infrastructure, Natural Resources and Environment (MINRE), Agência Fiduciária de Administração de Projeto (AFAP), ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)	Other Executing Partners(s): Ministério das Infraestruturas, Recursos Naturais e Ambiente (MIRNA, Ministry of Infrastructure, Natural Resources and Environment), ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)
The project objective was amended: “To promote investments in renewable energy and energy efficiency solutions with high GHG emission reduction and local value creation potential in the electricity sector”	Enhanced GHG emission reduction and domestic value creation through the uptake of inclusive renewable energy and energy efficiency technology markets

⁵ For questions A.1 –A.7 in Part II, if there are no changes since PIF , no need to respond, please enter “NA” after the respective question.

⁶ For biodiversity projects, in addition to explaining the project’s consistency with the biodiversity focal area strategy, objectives and programs, please also describe which [Aichi Target\(s\)](#) the project will directly contribute to achieving..

<p>“Project Components” as referred in PIF’s Table B:</p> <ol style="list-style-type: none"> 1. Strengthening the policy, legal and regulatory framework for sustainable energy solutions 2. Promoting investments in sustainable energy solutions 3. Strengthening capacities on sustainable energy island solutions 	<p>Name of the project components #1, #2 and #3 were modified:</p> <p>PC1. Policy, legal and regulatory framework for sustainable energy</p> <p>PC2. Sustainable energy investment promotion</p> <p>PC3. Qualification and certification framework for sustainable energy</p>
<p>“Expected Outcomes” as referred in PIF’s Table B:</p> <ol style="list-style-type: none"> 1.1 A conducive policy, legal and regulatory framework for renewable energy and energy efficiency is created and its implementation facilitated 2.1 Enabling investment framework for renewable energy and energy efficiency is created and its implementation facilitated 3.1 The capacities and knowledge-base of institutions and experts on renewable energy and energy efficiency island issues are strengthened 4.1 Effective and efficient implementation of the project 	<p>Numbering and name of the “Expected Outcomes” in Table B was changed to:</p> <p><u>Outcome 1:</u> Accelerated RE&EE market development through improved policy and regulatory framework and effective public-private coordination</p> <p><u>Outcome 2:</u> Increased investments in sustainable energy infrastructure and businesses</p> <p><u>Outcome 3:</u> Enhanced domestic public and private sector capacities to plan, implement, operate and innovate sustainable energy products and services in island contexts</p> <p><u>Outcome 4:</u> Continuous monitoring and evaluation (M&E) of the implementation of the GEF project conducted in accordance with established GEF and UNIDO procedures and guidelines</p>
<p>“Expected outputs” as referred in PIF’s Table B:</p> <ol style="list-style-type: none"> 1.1.1 A National Renewable Energy and Energy Efficiency Policy is developed and its adoption and implementation facilitated 1.1.2 A renewable energy law is developed and its adoption and implementation facilitated 1.1.3 Efficiency standards for electric appliances with potential to reduce the national peak load demand by at least 1 MW are developed and their implementation facilitated 2.1.1 A GIS based National Renewable Energy Resource Mapping identifying high-impact priority sites is developed and disseminated 2.1.2 A National Renewable Energy and Energy Efficiency Investment Plan is developed and presented to investors and financiers in at least two (2) investment fora 2.1.3 Innovative renewable energy projects (small 	<p>Numbering and name of the “Expected Outputs” in Table B was changed to:</p> <p><u>Output 1.1.</u> Coherent national sustainable energy policies with RE&EE targets established and under implementation</p> <p><u>Output 1.2.</u> Proposals for sustainable energy legislation, standards and a package of incentives developed, and their implementation facilitated</p> <p><u>Output 1.3.</u> EE standards for electric appliances are developed and their implementation facilitated</p> <p><u>Output 1.4.</u> Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration</p> <p><u>Output 2.1.</u> The STP RE and EE Status Report and the GIS based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated</p> <p><u>Output 2.2.</u> A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums</p> <p><u>Output 2.3.</u> Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects</p> <p><u>Output 2.4.</u> Based on existing instruments, a Financing Facility is</p>

<p>hydro, solar, wind and bioenergy) with a total installed capacity of at least 5 MW are developed to financial close and their implementation is facilitated</p> <p>2.1.4 Based on existing instruments a national renewable energy facility is created and undertakes regular call for proposals to support project development and investments</p> <p>3.1.1 Based on a capacity needs assessment: a qualification, certification and accreditation framework on sustainable energy is developed and its implementation facilitated</p> <p>3.1.2 Enhanced capacities of EMAE, AGR, MINRE and other authorities to integrate and manage on-grid/off-grid renewable energy systems and to enforce, monitor, and verify standards on efficient electric appliances</p> <p>3.1.3 At least one (1) on-line training program on sustainable energy solutions for island is developed in Portuguese and applied by capacity building institutions and experts in Sao Tome and Principe, Cabo Verde and Guinea Bissau</p> <p>3.1.4 At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on renewable energy and energy efficiency issues</p> <p>3.1.5 One hundred (100) national stakeholders are trained on sustainable energy issues by certified local trainers</p> <p>4.1.1 Project monitoring and evaluation system established and executed</p> <p>4.1.2 Terminal evaluation report</p>	<p>established and supports priority sustainable energy projects and business ideas</p> <p><u>Output 3.1.</u> Improved qualification, certification and accreditation framework on sustainable energy</p> <p><u>Output 3.2.</u> Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas</p> <p><u>Output 3.3.</u> On-line training program on sustainable energy solutions for island is developed in Portuguese and applied by capacity building institutions and experts in São Tomé and Príncipe, Cabo Verde and Guinea-Bissau</p> <p><u>Output 3.4.</u> Capacity support is provided for the operationalization of the National RE Associations</p> <p><u>Output 3.5.</u> At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on RE and EE issues</p> <p><u>Output 3.6.</u> Improved capacities of key stakeholders through national and sub-regional trainings, by train-the trainer approaches and training missions</p> <p><u>Output 4.1.</u> Mid-term review and terminal evaluation executed</p> <p><u>Output 4.2.</u> Project’s progress monitored, documented and recommended actions formulated</p>
<p>“Project’s Expected Contributions to Global Environmental Benefits” as referred in PIF’s Table F:</p> <p>Project Targets / 4. Support to transformational shifts towards a low-emission and resilient development path:</p> <p><i>201,000 metric tons of direct emission reduction over a period of 20 years. 402,000 metric tons of emission reduction if indirect emissions are</i></p>	<p>Project Target was revised and changed according to the estimates of direct and indirect GHG emissions reductions expected from the identified demonstration projects carried out using the GEF Climate Change Mitigation Tracking Tool.</p> <p>Thus, the “Project’s Target Contributions to Global Environmental Benefits” as referred to in Table E of the GEF CEO Endorsement are now:</p> <p><i>At least 1.83 million tons of CO₂e over projects lifetime:</i></p>

considered (replication factor of 2).

- Direct: at least 312,598 metric tons of CO₂e
- Indirect: at least 1,517,324 metric tons of CO₂e

A.1. Project Description.

A.1.1 The global environmental and/or adaptation problems, root causes and barriers that need to be addressed:

According to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5), the atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since preindustrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. These emissions will continue to grow over the next few decades if climate change mitigation efforts are not accelerated.

The Government of São Tomé e Príncipe (STP) has submitted two National Communications to the UNFCCC, one in October 2012 and the previous one in May 2005. The energy sector has been identified as the first contributor in terms of national GHG emissions in the 2012 communication. The sector relies on traditional biomass for cooking (mainly woodfuel) and on diesel for electricity generation. However, the country is a net carbon absorber, thanks to its forestry ecosystem that captures more carbon than it emits (-689.14 Gg CO₂ in the inventory of 2005).

Unfortunately, as tropical Small Island Developing State (SIDS), STP suffers the negative impacts of climate change (floods, coastal/river mouth flash floods, storms and recurrent drought episodes) in addition to suffering from the increasing expenses on fossil fuel imports, which leave less resources for financing adaptation/resilience measures. Moreover, the unsustainable use of traditional biomass for cooking accelerates trends towards overexploitation and mismanagement of forest resources.

The lack of access to electricity services in rural and remote areas hinders the efforts of communities to implement climate change adaptation measures. The change of rain patterns impacts the hydroelectric potential, and extreme weather events impact the transmission and distribution infrastructure (mostly located in the coastal zone) as well as agriculture and fisheries.

In line with the Paris Climate Agreement and the Sustainable Development Goals (SDGs), most developing countries have introduced ambitious targets to reduce GHG emissions (committed to reductions by 57 ktCO₂e in 2030, correspondent to 24% emission reduction compared to its 2030 business-as-usual scenario⁷) by scaling-up renewable energy (RE) and energy efficiency (EE) investments throughout the next two decades. STP aims at a RE penetration in the electricity mix of 50% by 2025 (in accordance to a recent interview to the Minister of Infrastructure, Natural Resources and Energy⁸).

RE&EE investments are far from reaching economies of scale in STP. The deployment of RE and EE solutions remains hindered by a broad range of barriers and shortcomings related to policy and regulation, fiscal and non-fiscal incentives, technical limitations, economics, finance, capacity, quality infrastructure, R&D and innovation frameworks, knowledge and awareness.

Barriers to be addressed

Institutional and Regulatory Barriers:

1. **Lack of institutional capacities for (least-cost) scenario planning, implementation and coordination:** The current electricity system is not based on a least cost scenario which takes RE&EE sufficiently into account. The continued dependence of the national utility on diesel generation (despite the availability of cheaper options) and no-cost recovery tariffs, the electricity sector remains highly subsidised. The subsidy regime is jeopardising the switch to more cost-effective on-grid and off-grid RE technology options and EE practices. The applied consumer tariffs have a social character that is not in accordance with the generation costs, which in turn is more than 90% based on imported fuel. It is estimated that the domestic customer pays on average only 46% of the actual value that should be applied if the cost of production is taken into account. As part of the “Power Sector Recovery Project” financed by the WB and the EIB, the Government (AGER) will be working on a more sustainable management and tariff scheme for the electricity system. The capacities of the Government to coordinate and steer the energy sector and sustainable energy integration remain weak. The Government has expressed its commitment to upscale the use of RE&EE but there is no clear strategy and prioritisation of investment projects and measures. There is also a lack of capacities to assess the quality and local value creation potential of the manifold project proposals put forward by external partners and project developers.

⁷São Tomé e Príncipe NDC Partnership “NDC Country Outlook, São Tomé e Príncipe”, November 2017, https://ndcpartnership.org/sites/all/themes/ndcp_v2/docs/country-engagement/countries/NCDP_Outlook_STP_v1a.pdf

⁸ Source: Interview to H.E. Mr. Carlos Manuel Vila Nova, MIRNA, <https://sidsdock.org/renewable-energies-in-the-future-of-sao-tome-and-principe>

- Lack of a coherent policy, legal and regulatory framework with focus on domestic sustainable energy potentials.** So far, the country has no national overarching energy policy in place. STP operates on the basis of several plans and laws which aim at regulating tariffs and prices. The main basis for the electricity system constitutes the “*Regime Jurídico do Setor Elétrico*” (Legal Regime of the Electricity Sector - RJSE) known as “*Lei de Bases do Sector Elétrico*” (Basic Electricity Sector Law), which was approved in 2014. The setting of a 25% RE electricity target by 2025 was an important step forward but needs to be translated in concrete laws and regulations which require enforcement. The RJSE highlights RE, EE and the role of Independent Power Producers (IPPs) but does not specify fiscal and non-fiscal incentives, feed-in or net-metering regimes. In addition, there is an absence of standard procedures (e.g. Power Purchase Agreements (PPAs) to guide the involvement of IPPs or Public Private Partnerships (PPPs). This hinders the attraction of private sector investments. The RJSE establishes the basis for the partial liberalization of the sector. There are also no clear regulations concerning net-metering and decentralised renewable energy systems (SHS, mini-grids) in rural areas. Additionally, there is no coherence with other key policies when it comes to the mainstreaming of RE&EE solutions in economic and industrial key sectors of the island economy (e.g. agriculture, fishery, food-processing, tourism). There is also a lack of attention on non-electricity solutions, such as sustainable cooking and solar-thermal systems. The latter has an important role in mitigating urban peak hours and in satisfying warm water needs in the expanding tourism sector. Solar dryers are common practice in the cacao sector. So far, the Government has not set any specific targets or standards for EE (e.g. buildings, lighting, appliances, industrial processes). The annual work plans of the Government “*Grandes Opções do Plano*” just speak about the need to establish an EE program. Sustainable energy entrepreneurship is also not included as potential value and job creating sector in current industrial development policies.

Financial Barriers:

- RE and EE projects and businesses continue to face financial barriers.** Due to the small market size, geographic isolation (see Annex K for details), high risks and regulatory uncertainty there is only low interest of banks and financiers to invest in the sector. Therefore, it is difficult to access to financing for the development and implementation of RE and EE projects. Also, Government budgets are limited to incentivise private sector investments. Moreover, the domestic capacities to develop bankable feasibility studies and appraise project proposals are very limited. Currently, no systematic bundling of projects and investment promotion take place and there is limited budget from the State to create an enabling environment for resource mobilization to encourage private sector investment. Very high interest rates of domestic banks for such projects make investments unattractive. Currently, there are no available tailored financing instruments (grant, lending, micro-credits) for grid-connected and off-grid solutions. Small-scale RE projects – particularly in the hydropower sector – are in many cases more economic in a life-cycle view but tend to have higher initial investment costs and longer pay-back periods than conventional alternatives (i.e. fossil fuel-based generators). Moreover, experiences from other islands (e.g. Cabo Verde) demonstrate that RE projects tend to be more expensive than in industrialized countries (e.g. due to transport costs, small quantities/capacities).
- Specific demand and supply(ier) side RE&EE incentives are inexistent.** There is no defined incentives scheme for RE generation. Although it is foreseen in the RJSE, it has not yet been regulated so it does not allow for private investments in RE despite the existence of some interested developers. Thus, potential RE projects proponents have no access to special regimes or incentives. The exceptions are isolated RE generators or self-consumers who do not need a special licence to operate RE systems (they only need authorisation from the DGRNE). As specified in the RJSE, self-generation and consumption have no limit in terms of capacity that can be installed, and self-generators may sell excess energy only if they consume at least 60% of what they generated. In the current Investment Code, there is no differentiation between national investment and foreign investment and it follows a logic of fiscal incentive through specific legislation. Therefore, the Code refers to the Code of Fiscal Benefits. Only investment projects with a value of EUR 50,000 or more are eligible for the incentives. Projects can be applied for under three incentive schemes, the simplified scheme, the general scheme and the special scheme.

STP also has a tax regime from 2008 applicable to energy generation companies. No special exemption is made for RE producers, so they are subject to the usual taxes as any other company. The companies are subject to taxes on: income (Tax Code on the Income of Collective Persons, approved by Law no. 16/2008 and the Tax Code on the Income of Individual Benefits, approved by Law no. 17/2008), Stamp Duty on the issuance of documents, (provided for in the Stamp Duty Regulation, approved by Decree-Law no. 7/2005), on the provision of services (Consumption Tax, approved by Decree-Law no. 9/2005), and others of a more general nature, such as taxes on the free and onerous transmission of goods, or taxes on the ownership of vehicles, aircrafts, boats and real estate. The activities of the energy sector are subject to a 5% service charge on the value of the provision of services and must be paid by the final consumer, which is a common practice for the sole electricity company EMAE. Within the Customs Framework there is no specific distinction between the importation of goods or products for the generation of energy in comparison with other consumer goods or equipment.

Technical / Technology Barriers:

5. **So far there is no comprehensive GIS based mapping of the theoretical economic and technical RE potential available.** There exists no reliable information on the exact potential for each of the RE sources present in STP. Existing data indicate that the country can rely on a wide range of RE potentials which could provide base load and peak load capacities in more competitive terms than the diesel-based alternative that currently dominates the generation mix, but a more detailed analysis and mapping of the available potentials is necessary. The set RE targets of the Government are currently not based on a real potential analysis.

A hydropower assessment financed by Taiwan (conducted by CECI Engineering Consultants in 2008) is based on topographic and river flow data and identifies 34 potential sites (with installed capacities varying between 0.5 – 6 MW) with an overall estimated theoretical electric capacity of 63 MW, correspondent to an approximate total annual generation of 244 GWh. The modelling-data of the hydro assessment would have to be updated by more detailed site assessments and measurements. The potential impact of climate change on river flows would have to be considered. According to the Government, the systematic collection of hydrological data was re-established recently in some areas.

Biomass is mostly used as primary energy for cooking and domestic uses in the form of woodfuel (around 49% of the families use wood for cooking purposes in STP). However, it is crucial to quantify forest resources in order to manage its exploitation, reduce uncontrolled deforestation and ensure its sustainability. There could be some potential from the use of agricultural waste (from palm oil production, sugarcane bagasse, cocoa waste). Biogas from urban solid waste (especially in the tourism sector) is also an option that needs to be deeply explored in STP, and some projects have already been implemented that make use of this resource (such as the project Bioenergy in STP – Use of Biogas⁹ implemented to demonstrate the applicability of the use of this resource in São Tomé between 2014 and 2016).

Solar energy has not been quantified at national level (only one specific project in Lobata district has been undertaken by TESE and data has been collected), although general irradiation information can be taken from satellite data and images to have as initial reference. The geographic location of STP provides a good possibility of exploring solar energy for both low and medium temperature thermal purposes as well as for electricity generation through photovoltaic panels. The solar incidence at the general level in STP is 4.25 kW / m² / day, according to NASA data, with the greatest solar potential in the coastal zones.

So far, no detailed wind measurements have been undertaken at country level. The only information available comes from the INM which indicates an average wind speed between 2,5 and 6,3 m/s, being the southern part of São Tomé Island the windiest one. There is also 1-year information collected by EDP on Roça Abade on Príncipe Island to analyse possibilities of using wind energy. The potential for ocean energy technologies remains unknown.

6. **There is no centralised database with RE and EE data.** STP has no centralised database of RE and EE data that is available to key stakeholders, project developers, investors and the public in general. The creation of such a database, with information regarding energy generation resource potential, energy generation data, RE and EE projects implemented and under implementation as well as other related to the energy sector, would be beneficial for STP and would increase transparency and attract private foreign and national investors.
7. **Poor energy transmission and distribution grid.** The introduction of intermediate grid-connected RE sources is limited (e.g. solar, wind) and needs sufficient dispatch capacities and grid management training. Due to its hydro potential and limited seasonal river flow variations this challenge is not expected to play a major role in STP. Currently, the national grid faces some grid instability issues and electricity losses. In 2016, the energy produced reached 105.8 GWh but the total volume of electricity billed was 63.5 GWh, so it is concluded that there was a big volume of electricity losses. Technical losses are due to lack of maintenance in transportation and distribution infrastructure, while commercial losses are due to fraud (electricity theft, including illegal connections and meter tampering, lack of payment by customers and the lack of electricity meters for end-users, which leads to accounting errors and faulty record keeping). EMAE is implementing actions towards splitting the transport and distribution infrastructure as well as towards constructing new transmission lines, distribution lines, substations, refurbishment of existing infrastructure and building a new National Dispatch Center. All these actions aim at increasing the systems' stability and improve its operation and are being done with external support from multilateral organisations and donors, particularly under the "Power Sector Recovery Project" financed by WB/EIB.
8. **Other technology related limitations.** In STP it is difficult to have access to RE and EE equipment as there is no local production and the import processes are bureaucratic. Moreover, in contrast to diesel generators there are no well-established logistical and maintenance structures for RE in place. The use of PV is mostly observed in isolated areas for self-consumption and is limited due to the scarce space available. Also, the use of wind power could be limited due to the land roughness in STP.

⁹ <http://www.bioandenergy.com>

Capacity, knowledge and qualification barriers:

9. **Capacity, knowledge and awareness barriers concern all relevant key stakeholders in STP.** Policy makers on federal and municipality level, utility, regulator, consultants, project developers, businesses and industry, banks and civil society need to be trained on RE and EE solutions addressing all aspects: technical and technological, financial and economic, environmental and social benefits, etc. In STP there is no qualification, certification and accreditation framework for sustainable energy. There is lack of training courses and educational programs at all levels focusing on RE (e.g. higher education, vocational training). Moreover, currently no quality standards for qualification and certification of RE&EE products and services are in place.

Specific training activities have been conducted in the context of donor-funded projects such as the Solar Schools project implemented by the NGO “TESE” in 2011 with support from DGRNE, the Ministry of Education and the University of Science of Lisbon, that aimed at increasing access to quality education for children and adults, particularly women, from off-grid rural areas grid through the installation of PV systems in schools with ongoing adult literacy courses. The project provided training for 19 PV installation technicians who, in turn, installed solar PV systems in 32 schools.

There is limited technical capacity to design, evaluate, install and operate on-grid and off-grid RE systems (including hybrids and mini-grids). Moreover, there exists very little experience in business models, operating models and tariff setting schemes for RE based (hybrid) mini-grids. Sustainable energy entrepreneurs, energy service companies (ESCOs) and RE service companies (RESCOs) are nearly non-existent. The technical capacities of the utility and the regulator to deal with sustainable energy are weakly developed and mainly focused on conventional solutions (e.g. diesel generators). This explains also the poor servicing of colonial hydropower stations.

There is little capacity among government officials and the private sector on hydropower design, operation and maintenance. This should be improved in order to ensure future developments on hydropower are properly planned and monitored. In rural areas the capacity and knowledge barriers are even more severe. There is very poor awareness of RE (hybrid) mini-grids and other RE solutions with the potential to promote productive uses in agri-business or fishery (e.g. water pumping, ice production). Local customs at ports and airports have only very weak capacities to check EE and labelling standards.

Barriers for entrepreneurship and innovation: The capacities of the domestic private sector to supply sustainable energy quality products and services under competitive prices is an important bottleneck for the uptake of sustainable energy markets in STP. The domestic manufacturing and servicing sectors are weakly developed, and the growing demand remains underserved by international suppliers and supply chains due to high market entry costs and risks. Moreover, due to weak R&D infrastructure and spending, the link between innovation and entrepreneurship is weak. Both are grounded in the application of scientific research. Science and technology are a major catalyst for the creation of innovative products and services. Innovation and entrepreneurial activities need the right mix of: education and training, research and development, applied science and technology, as well as financing.

Current technology transfer programs available in STP tend to focus on creating demand for RE&EE products and services and tend to ignore supplier-oriented actions. Such trends raise concerns regarding the inclusiveness of technology transfer processes. This offers opportunities, but also bears the risk that the local value and job creation effects of such investments remain low in STP and are not sustained in the long-run. Even basic equipment and services (e.g. consulting, energy auditing, installation, maintenance) continue to be imported. The lack of domestic suppliers and service providers questions the long-term sustainability of already undertaken renewable energy investments. The lack of domestic R&D and entrepreneurship hinders the commercialization of solutions adapted to the realities of SIDS. There is need for particular emphasis on actions directed to increase the domestic value creation of RE&EE investments. More focus on actions to strengthen the productive (manufacturing, assembling, servicing) and innovation capacities of domestic entrepreneurs (e.g. fiscal and non-fiscal incentives, incubation, acceleration, R&D, quality infrastructure and standards, qualification, IPs, cluster building) is needed.

10. **Weak/limited development of international cooperation and exchange initiatives on RE and EE issues.** There is a need to establish cooperation and knowledge exchange initiatives with Universities and Investigation Centres in the areas of RE and EE. There has been an experience in 2013 (with the University of Vigo, Spain, under the EU-HEEMS Project¹⁰) which through STP Polytechnic Center supported the implementation of a project that consisted in the promotion of energy access as well as the efficient use of energy. The project was aimed at strengthening higher education as a tool to promote those topics applied to poverty reduction in the maritime sector through capacity building and regional integration.

The proposed GEF-UNIDO Project Components and their set of activities, which are described in Section A.1.3, aim to tackle the above-mentioned issues and barriers. With this approach, UNIDO addresses a major growth barrier for sustainable energy markets, reduces negative environmental externalities (GHG emissions, local pollution) and promotes value and job creation simultaneously. In many regions, the sustainable energy and climate sector is considered as a future growth sector, which offers business and

¹⁰ <https://www.acp-hestre.eu/newsroom/spotlight-heems-reinforcement-higher-education-tool-foster-efficient-use-energy-applied>

employment opportunities particularly for small and medium sized enterprises (SMEs) that create jobs and are essential for the overall development of the economy. This is particularly true for small island developing states (SIDS).

A.1.2. Baseline scenario and any associated baseline projects

Country Context:

The Democratic Republic of São Tomé e Príncipe (STP) is an archipelago comprised of two small islands and several islets located in the Gulf of Guinea, a region known for its important biological diversity and its dense hydrographic network, in the Atlantic Ocean. The islands are volcanic with a very rugged relief, high precipitation and medium soil fertility. Its total surface is 1,001 km² and has a Maritime Exclusive Economic Zone comprising 170,000 km². Consequently, STP is part of the SIDS group. Príncipe is the closest island to mainland Africa and has an area of 142 km² with a population estimated at 7,500 inhabitants. São Tomé, the largest island, lies further out and covers an area of 859 km² with about 180,000 inhabitants (World Bank, 2016). The country is divided into six districts (Água Grande, Cantagaló, Caué, Lembá, Lobata, and Mé-Zóchi) plus the Autonomous Region of Príncipe (RAP – Região Autónoma de Príncipe), which has been self-governed since 1995.

In 2017, STP ranked 142 out of 188 countries in the Human Development Index (HDI) and is in the 17^o position at African level. Still, the country situation remains fragile. São Tomé e Príncipe is a lower-middle-income country. Gross national income per capita is estimated at US\$1,200 in Purchase Power Parity terms; whereas, gross domestic product (GDP) per capita is US\$1,692. One-third of the population lives with less than US\$1.90 per day in Purchase Power Parity terms and more than two-thirds of the population are categorized as poor by considering the poverty threshold of US\$3 at Purchase Power Parity per day. The country's most important sector is that of services. The main economic activities are in tourism, retail, transport, communication, and construction. Agriculture and fishing are mainstays for the majority of the population, despite their modest contribution to the GDP. Cocoa export, in value, represents 95% of the country's export although the production has been declining in recent years because of drought and mismanagement, which has resulted in a persistent balance-of-payments problem. All fuels are imported, and domestic food-crop production is inadequate to meet local consumption, therefore, the country also imports a significant amount of its food products.¹¹

As a SIDS, STP faces special challenges in relation to its small size, remoteness from large markets, lack of resources, heavy dependence on imports, a significant trade deficit, and high dependence on a small number of economic sectors, direct investment and remittances inflow. Moreover, the country demonstrates a high dependence on expensive fossil fuel imports and economic key sectors are highly vulnerable to external economic, natural and climate shocks. The country, as an island state, is also particularly vulnerable to climate change impacts.

The country has achieved some of the Millennium Development Goals (MDGs): universal primary education (MDG # 2), improving maternal health (MDG 5), combating HIV/AIDS, tuberculosis, malaria, waterborne diseases, among others (MDG # 6). The MDGs that have not yet been fully met by the country are: eradicating absolute poverty and hunger (MDG # 1), reducing child mortality (MDG # 4), ensuring environmental sustainability (MDG # 7), and developing a global partnership for development (MDG # 8).

STP presented its country report in the context of the “Third International Conference on SIDS” held in Samoa, with the overarching theme of “The sustainable development of small island developing States through genuine and durable partnerships”. The SIDS Accelerated Modalities of Action (SAMOA) Pathway (Samoa Pathway) adopted at the Conference addresses priority areas for SIDS and calls for urgent actions and support for SIDS' efforts to achieve their sustainable development¹². The report evaluates progress made since the Earth Summit held in Rio in 1992 focusing on the Barbados Programme of Action (1994) and the Mauritius Strategy (2005). It concludes that STP made progress in terms of economic growth and environmental protection although efforts are still needed to fulfil the goals. In the recent past years, the country was able to create a legal framework to implement the commitments made at international level (STP signed and ratified main UN conventions addressing environmental topics). Articulating the three main pillars of Sustainable Development (economic, social and environmental) still remains a big challenge for STP and the creation and operationalization of an organism responsible for the Sustainable Development of the country is necessary, as recommended by the UN. Creating strategic partnerships are vital to face poverty and boost sustainable development, in addition to updating key policies, plans, regional strategies and related targets¹³.

The STP Transformation Agenda 2030 (built on the country Vision 2030) aligns with the SDGs, as adopted by the international community, on September 25, 2015 and is expected to take advantage of the momentum enabled by the MDGs¹⁴. The following matrix depicts how the STP Transformation Agenda aligns with the SDGs:

¹¹ 2013, UNEP RISO, Emissions Reduction Profile STP.

¹² Source: <https://sustainabledevelopment.un.org/topics/sids>

¹³ Source: Relatório Nacional, Preparação À Terceira Conferência Internacional Sobre O Desenvolvimento Sustentável Dos Pequenos Estados Insulares Em Desenvolvimento, Ápia, Samoa 2014, <https://sustainabledevelopment.un.org/memberstates/saotomeprincipe>

¹⁴ Source: 2030 Transformation Agenda, São Tome and Príncipe International Conference for Development Partners, 15th October 2015. London, http://www.st.undp.org/content/dam/sao_tome_and_principe/docs/Centre%20de%20press/undp_st_GLAagenda_En.pdf

FIGURE 1: SDG MATRIX IN THE STP TRANSFORMATION AGENDA-2030

SDG Matrix articulation with the STP Transformation Agenda-2030

DOMAIN	SUSTAINABLE DEVELOPMENT GOALS	TRANSFORMATION AGENDA
PEOPLE	1, 2, 3, 4, 5	<ul style="list-style-type: none"> ➤ Poverty Reduction in rural and coastal regions ➤ Promotion of youth employment of through education and training ➤ Strengthening the health system
PLANET	6, 12, 13, 14, 15	<ul style="list-style-type: none"> ➤ Environmental protection and Collateral damage growth control due to the growth
PROSPERITY	7, 8, 9, 10, 11	<ul style="list-style-type: none"> ➤ Promoting of transparency and accountability in public affairs ➤ Infrastructure to support growth programs ➤ Simplification of the legislation/business Environment
PEACE	16	<ul style="list-style-type: none"> ➤ Strengthening homeland security, public safety, and coastal security

The STP Government recognised that promoting national ownership of the SDGs through public policies is vital to make progress on their achievement. The Government also stated that is it necessary to mobilise financial resources and technical assistance from development partners in order to finance and implement programmes towards achieving the SDGs by 2030 in alignment with the Transformation Agenda.

SIDS face economic and environmental challenges as they intend to use their limited energy resources in the most prudent and efficient possible manner. Prices of electricity are generally higher than those for countries that are connected to a continental land mass. This is because islands offer little or no opportunity to interact with other electricity grids, and there needs to be a greater amount of capacity reserved on islands to be able to compensate it.

Electricity sector:

The STP electricity system is characterized by low levels of supply-side and demand-side efficiency and low diversification of the electricity matrix. The low efficiency of power generators increases the fuel demand leading to an average 1,000 barrels of diesel imported per day (UNDP, 2013). The national utility Empresa de Água e Electricidade (EMAE) mainly relies on thermal electricity generation, since only 5.5% comes from hydropower (grid-connected Contador HPP on São Tomé island). The following table provides details on the existing and available generation capacity on the islands:

TABLE 1: INSTALLED AND AVAILABLE ON AND OFF-GRID GENERATION CAPACITY IN STP

Generation plant	Type of generation	Installed Capacity (MW)	Available Capacity (MW)	Location (island)	Operator
On-grid					
São Tomé	Thermal	11.98	4.86	São Tomé	EMAE
Santo Amaro 1	Thermal	8.50	8.50	São Tomé	EMAE
Santo Amaro 2	Thermal	6.10	5.20	São Tomé	EMAE
Bobo Forro 1	Thermal	4.00	1.65	São Tomé	Albrvevet
Bobo Forro 2	Thermal	3.40	1.35	São Tomé	EMAE
Contador	Hydro	1.92	1.50	São Tomé	EMAE
Príncipe	Thermal	3.36	2.88	Príncipe	EMAE
Sub-total 1		39.26	25.94		
Off-grid					
S. Luzia	Thermal	0.08	0.08	São Tomé	
Porto Alegre	Thermal	0.1	0.08	São Tomé	

Ribeira Peixe	Thermal	0.08	0.08	São Tomé	
Central Térmica de Príncipe	Thermal	3.60	2.88	Príncipe	
Papagaio	Hydro	0.08	-	Príncipe	
Sub-total 2		3.94	3.12		
Total (1+2)		43.20	29.06		

The sector is characterized by poor management of the power production, transmission and distribution infrastructure. Grid losses represent around 40% of the power generation. The scattered geographic distribution of remote rural areas, made of a succession of mountains and valleys, also makes it more challenging to build new connection infrastructure. There is lack of public and private investment in the maintenance of and new energy infrastructure. In the Public Investment Program (PIP) for the period of 2003 to 2010, energy investments represented only around 3.8% of total investments. In 2016 EMAE's started the implementation of the STP Power Sector Recovery Project (PSRP) aiming at, between other things, increasing the feasibility of the electricity generation, transmission and distribution systems through the rehabilitation of some generation systems and of the transmission and distribution grid (see below under "Baseline projects"). Hydropower was widely used for electricity generation in STP during the 1960-1980 period but due to lack of maintenance and investment in new hydropower generation, energy from this source started to diminish. Its contribution to the total on-grid electricity capacity is now very low.

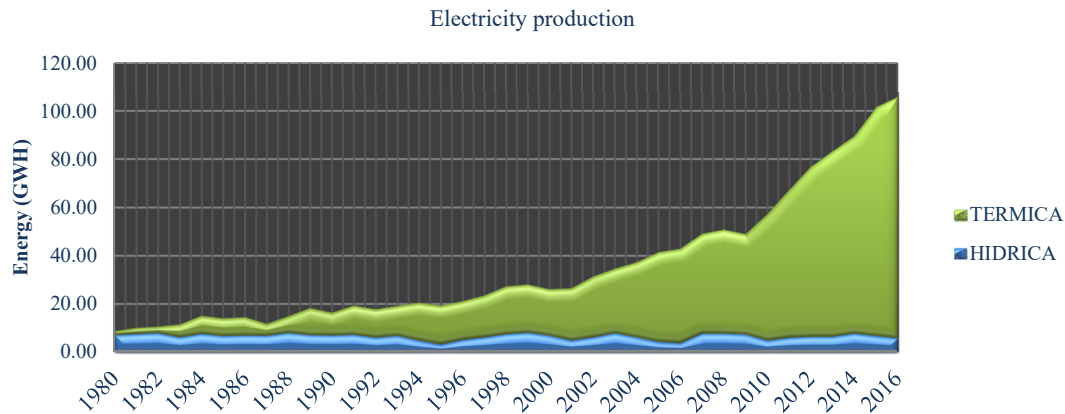


FIGURE 2: ON-GRID ELECTRICITY GENERATION IN STP (SOURCE: DGRNE)

The challenges in power generation, transmission, and distribution result in frequent power cuts and outages. Therefore, a high number of large consumers (e.g. hotels, agribusinesses) invested in even more expensive decentralized diesel-based generation capacities. There is also unequal access to energy services across social groups. Low-income groups spend significantly more of their income for energy services. The rate of electrification at national level has been increasing. According to the National Statistics Institute (INE) and EMAE data, the STP electrification rate in recent years has increased from 57.9% in 2012 to 74.5% in 2018. The electrification rate in 2018 in São Tomé was 75.3% and in Príncipe 56.8%.

So far, small-scale RE solutions were not introduced systematically to promote the productivity of economic key sectors such as agribusiness (e.g. solar water pumping), fishery (e.g. solar ice production) and tourism (e.g. solar thermal water heating). Solar energy has been used in telecommunications applications, military applications, wastewater treatment and private/NGO initiatives.

Baseline scenario (i.e. situation in the country should no intervention of GEF take place)

Universal access to electricity services and the decoupling of power generation from GHG emissions require a transformational shift in the STP electricity system in the upcoming years. In the Business-as-usual scenario the GHG emissions of the energy sector will more than double by 2030 – considering the 2012 baseline (even if the country continues to be a natural carbon sink). There is urgent need to make use of RE and EE potentials. By building on the political commitment of the Government and SDG-7, the GEF project aims make the transformational shift towards universal access, renewable energy and energy efficiency a reality.

➔ **Business as usual (BAU) scenario**

Without enabling activities aiming at the mitigation of existing barriers for RE&EE market integration, STP will continue to rely on imported fossil fuels and external aid to supply its energy needs. The challenges of energy security (e.g. dependence on fluctuating fossil fuel import prices), energy poverty and energy related environmental externalities (e.g. local accidental fuel spills in the ocean, particulate matter emissions, GHG and other gaseous emissions from fossil fuel burning) will remain unaddressed.

Baseline policies, plans and strategy framework:

The current baseline policies, plans and strategies of STP acknowledge the importance of achieving and conducting actions towards reduced fossil fuel import dependency by promoting RE&EE. However, as described, there is still no clear plan on how to transform the commitments into action and concrete laws and regulations. Therefore, the GEF project proposes a set of activities which are fully in line with the policy and strategy framework of the Government (additional information can be found in Annex K Baseline Report):

- 2018 – *Update on the Urban Solid Waste Integral Management Action Plan*
- 2017 UNDAF *United Nations Development Aid Framework (2017-2021)*: three objectives are expected to be achieved by 2021, namely: i) Disparities and inequalities are reduced at all levels through the full participation of vulnerable and key groups and their development and use of social protection services and basic social services; ii) Central and local public administration and control institutions are more effective, with guaranteed citizen participation, in particular by young people and women; iii) Employment and competitiveness are ensured through economic diversification, the development of resilience to climate change, the improvement of the quality of life of poor and vulnerable populations in rural and urban areas, as well as access to finance and the market for young people and women;
- 2017 - *National Development Plan 2017-2021*: designed to operationalise the Transformation Agenda STP 2030 and the Sustainable Development Goals (SDGs); replaces the National Poverty Reduction Strategy II. It is based on five following strategic objectives to be achieved in their related fields of action: 1) economic field – further explore country’s potential and strengthen its inclusion in the global economy to achieve an accelerated and sustainable economic development that generates employment and alleviates poverty, 2) social field – accelerate and deepen social reforms to improve the human development index and progress towards the achievement of the SDGs by 2030, 3) institutional field – improve national development strategic management capacity and strengthen good governance and democracy, 4) economic and social infrastructures – develop electricity grids, transport, and water and sanitation infrastructures, promote telecommunications and ICT development, towards reducing production costs, improve living conditions and make good use of opportunities offered by the use of PPPs, 5) environmental field – improve land management and environment preservation.
- 2016/2015 - *São Tomé and Príncipe - Nationally Determined Contribution (NDC) / Intended Nationally Determined Contribution (INDC)*: After signing the Paris Agreement in December 2015, Parties agreed to communicate its NDCs. In November 2016 STP submitted its first NDC, which is stored in a web Registry managed by UNFCCC (publicly available¹⁵). STP adopted as its first NDC the original INDC document developed in 2015 (it is the same document). NDCs are submitted every five years to the UNFCCC secretariat, with the next round of NDCs (new or updated) being submitted by 2020.

STP NDC document states the importance of taking actions towards reducing climate change impacts in a vulnerable country like STP, which is a SIDS. Implementing climate change adaptation and mitigation actions in STP requires financial resources, access to technology and capacity building through external assistance. Adaptation measures are crucial to diminish the impacts of climate change in all sectors of the national economy, such as: Agriculture and Livestock; Forest and Soil; Water, Energy and Fishing; Coastal Zone and Population; Health and Education. A total of 17 projects have been listed in the NAPA. There are several gaps and barriers that prevent STP from developing and implementing adaptation measures: financial barriers, technological barriers and lack of skilled human resources, and institutional and political barriers (details on each one is provided in the NDC document). In terms of mitigation, in spite of the fact that STP is a natural carbon sink, the country has set as objective to reduce carbon emission below the BAU (based on 2005 GHG inventory) by 2030 (57ktCO₂eq). Also, for the mitigation actions to take place, external aid is needed (country estimated around USD 59 Million will be necessary)¹⁶. The measures proposed in the NDC include targets for the use of hydropower and PV plants.

- 2015 - *Transformation Agenda 2030 “São Tomé e Príncipe 2030: o País que queremos construir” (“STP 2030: the country we want to build”)*: strategic axes are: 1) consolidate the rule of law and deepen democracy, 2) sustainable development, 3) promote human development, 4) promote values and favour the acknowledgement and maintenance of a virtuous process towards the success of development policies.
- 2014 - *“Regime Jurídico da Organização do Setor Elétrico” (RJSE)*: The electricity sector in STP is essentially defined by the *Organisational Legal Regime for the Electricity Sector* (RJSE from Portuguese acronym of “Regime Jurídico da Organização do Setor Elétrico”), approved by Decree-Law 26/2014. The regulation applicable to the electricity system can be grouped in three parts: i) basic sector legislation: RJSE; ii) complementary regulation to the RJSE; iii) “cross-sectoral” legislation applicable to the electricity sector and others (e.g. environmental legislation).
- 2012 - *Decree No.13/2012*: created the National Committee for Climate Change for the implementation, coordination, monitoring and evaluation of the UNFCCC.
- 2012 – *Second National Communication to the UNFCCC*

¹⁵ <http://www4.unfccc.int/ndcregistry/pages/Party.aspx?party=STP>

¹⁶ https://ndcpartnership.org/sites/all/themes/ndcp_v2/docs/country-engagement/countries/NCDP_Outlook_STP_v1a.pdf

- *2012 - Second National Strategy for Poverty Reduction (Estratégia Nacional da Redução da Pobreza ENRP/II-2012-2016):* the strategy has six axes: 1) public institutions reform and strengthening good governance, 2) promotion of an integral and sustainable economic development, 3) human capital development and basic social services improvement, 4) reinforcement of social cohesion and protection. It was replaced by the National Development Plan 2017-2021.
- *2011 – Urban Solid Waste Integral Management Action Plan*
- *2006 –National Action Plan for Adaptation to Climate Change (NAPA/PANA):* outlines 22 priority projects and actions with a focus NAPA’s actions focus on (i) creating capacities and tools for disaster risk management; (ii) reducing risks and vulnerabilities in the housing and real-state sectors; (iii) developing resilience measures in the agriculture, fisheries, and health sectors; (iv) conducting actions to reduce coastal areas erosion and flood-risks; and (vi) promoting the sustainable management and use of forestry resources.
- *2006 - Agricultural Policy and Rural Development Paper*
- *2005 - First National Communication to the UNFCCC*
- *2004 - National Climate Change Strategy*
- *1999 - Law No.10/99 – Basic Law on Environment*

Baseline projects:

The investments in RE&EE solutions is insignificant. The baseline of operating RE&EE systems in STP is limited to the small hydropower station Contador (1.92 MW of installed capacity of which 1.5 MW is operational), and a number of PV solar home and biogas systems. Since colonial times, the share of RE in the electricity sector is decreasing. There are no major EE programs under implementation. Most of the on-going or past projects concerning RE and EE in STP have relied on external aid and donations. Attempts to promote private sector investments failed. Moreover, domestic sustainable energy technology suppliers and service providers are nearly inexistent.

Target: The GEF project will create strong synergies with the ongoing or just starting programs and projects supported by international development partners:

→ International and sub-regional

- **World Bank – European Investment Bank STP Power Sector Recovery Project (PSRP) (July 2016 – June 2020):** this is being implemented with support from the WB and EIB aims at (i) increasing RE generation and (ii) improving the reliability of the electricity supply. The project has the following priority actions:
 - i) support for electricity institutional reform electricity sector planning: aiming at (a) strengthening the capacity of the regulatory agency, and (b) ensuring planning of optimum investments needed to develop the power sector in the country, from electricity generation to the effective connection of end users. This includes activities such as:
 - restructuring of EMAE, AGER and DGRNE,
 - capacity building;
 - developing the Least Cost Power Development Plan (LCPDP). This was subcontracted in December 2017 and is expected to be concluded in July 2018. The LCPDP will provide guidance to the utility for the next 20 years for all segments of the electricity supply chain (generation, transmission, and distribution).
 - Developing a Tariff Study (this is being managed by AGER).
 - ii) strengthening EMAE’s governance and operational performance: upgrading technical sector as well as electricity commercialisation, acquire and implement operational management systems. This includes the preparation and endorsement of EMAE’s Restructuring Plan (expected to be completed in July 2018) for a three-year period, focused on improving efficiency, transparency, and accountability of EMAE’s performance in the key operational areas of electricity supply, commercial functions, and management of corporate resources, with specific emphasis on better service quality and nontechnical loss reduction.
 - iii) increasing electricity generation, transmission and distribution reliability: including priority investments in the rehabilitation and potential expansion of the Contador small hydropower plant, the rehabilitation of the Contador evacuation line and medium voltage (MV) network, and the upgrading of existing low voltage (LV) network in selected districts of the country.
 - iv) assistance to metering and network strengthening.

In relation to the priorities iii) and iv) EDP is carrying out study on the LV network and the adoption of meters.

The first three priority activities are financed by the WB while the fourth one is being financed with EIB funds. The project is being implemented through *Agência Fiduciária de Administração do Projeto (AFAP)* based in STP.

- **São Tome and Principe Mini-Hydropower Projects Support Programme 2018-2020 (AfDB/SEFA)** – The program is currently in the design phase. It aims at creating and enabling environment for private sector investment into mini hydropower projects in STP. This is intended to be done through provision of technical assistance to the Government of STP to undertake project feasibility studies and administrative tender process to solicit potential investors and EPC companies. Specifically, the SEFA grant will cover (a) carrying out detailed feasibility studies, front end engineering designs including interconnection studies to the main grid, elaboration of ESIA's and project financial analysis; (b) Preparation of projects to be developed under the ADF-14 window and preparation of the tender documents with project packages and administering competitive bidding process to solicit additional investors from private sector. A close cooperation with AfDB on the development and implementation of hydro power priority sites was agreed (see co-financing letter in Annex O).
- **South-South Cooperation Programme “Seminário Boa Governação de Energias Renováveis”– AECID (2015)**: The programme was a trilateral cooperation among Spain (Canary Islands), Cabo Verde and STP and allowed for the conduction of the seminar “Good Governance in Renewable Energy” and enabled the installation of a PV system that provides 12 kWh/day to agricultural products cooperative in the Bernardo Faro community. It was important to share the experiences of the three states in RE development.
- **European Union Energy Initiative Partnership Dialogue Facility (2011)**: The EUEI-PDF has undertaken a scoping study tour to STP in order to assess the country's readiness and the potential for the introduction of RE technologies as new sources of electricity generation. There was agreement that there is need for a coherent policy and regulatory framework for RE and EE. UNIDO and EUEI-PDF agreed that this GEF project will contribute to this activity.
- **The SIDS Sustainable Energy and Climate Resilience Organization (SIDS DOCK)** is supporting all SIDS in promoting sustainable energy island solutions through knowledge exchange and capacity building. Past efforts include also activities in STP. UNIDO and SIDS DOCK are cooperating on the establishment regional sustainable energy centres for SIDS in the Pacific, Africa, Caribbean and Indian Ocean.
- **ALER (Associação Lusófona de Energias Renováveis)** is promoting south-south capacity building and knowledge exchange activities between the Portuguese speaking countries in Africa. ALER is cooperating with UNIDO within the GEF/UNIDO project “Promoting investments in small to medium scale RE technologies in the electricity sector of Guinea Bissau”. The cooperation includes the development, publication and dissemination of the “Guinea-Bissau RE and EE Status Report” and the organization of investment workshops. UNIDO, ALER and the Government are partnering on the development of the STP RE&EE status report in the context of this GEF project.

➔ Private sector and civil society

- **TESE / DGRNE / MECS “Solar Schools” project (2011)**: implemented by TESE with support from DGRNE, Ministry of Education, Culture and Sciences (MECS) and Science University of Lisbon and financed by Portuguese Cooperation (Instituto Camões), MECS, and UNDP. It enabled the installation of 63 PV systems in 32 schools located in isolated areas and provided capacity building to 19 technicians. This project was replicated in 2013 in local fishermen and farmers cooperatives providing them with PV systems (2 kWh/day).
- **Several PV systems privately installed for self-consumption**: see Section 4.3 of Baseline Report.
 - **Programa de Apoio Participativo a Agricultura Familiar e Pesca Artesanal (PAPAFPA)** in 2013 supported the installation of 2kWh/day PV autonomous systems in a dozen Cooperatives.
 - **PV power plant on Príncipe Island** that provides energy to CST communications tower, built in 1987, with 21 new PV panels of 240 W with lead-acid batteries. The system is operating well. (Source of info: EDP)
- **Biogas generation in the Penha Landfill (expected to start in 2020)**: located in the Agua Grande District the aim of the project is to burn the biogas produced by the landfill. Although the project has been identified no financing has been raised yet.
- **Biogas generation from domestic biodigesters in rural communities from Mé-Zóchi, Cantagalo and Lembá (2014)**: the project uses domestic waste to generate biogas for cooking. It was framed under the Portuguese

initiative for immediate implementation (“Fast Start”) concerning climate change. The total cost was € 658,765,89 and was funded by the Portuguese Carbon Fund, Camões Institute and the Portuguese Environmental Agency. Currently, 18 families use biogas instead of woodfuel for cooking.

A.1.3 Proposed alternative scenario

→ Alternative scenario

In the business as usual (BAU) scenario the introduction of RE&EE solutions in STP would continue to be hindered by a broad range of barriers. In this scenario, the attainment of the ambitious sustainable energy and climate mitigation and “green economy” objectives of the Government would remain uncertain. Key economic sectors would continue to suffer from unsustainable patterns of the electricity system.

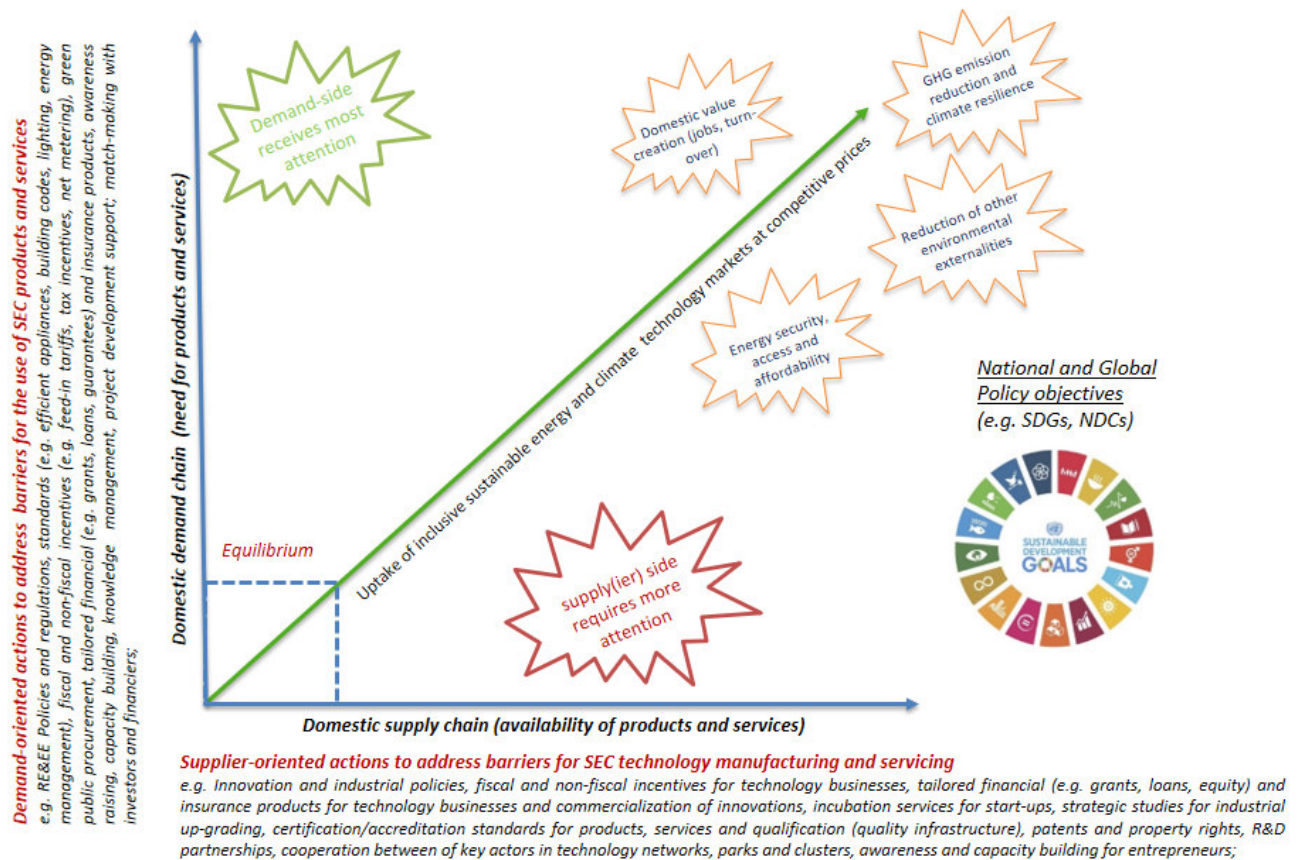
The GEF project will significantly contribute to the transformational change of the electricity system of STP to a sustainable low-carbon development path. It will focus on a set of integrated interventions in the areas of policy and regulatory frameworks, institution building, technology demonstration, pre-investment support, as well as qualification and certification. The interventions are directed towards the creation of an enabling environment for the uptake of inclusive markets for RE&EE products and services in STP.

Under the project, the Government will develop a coherent vision and road-map on how to achieve SDG-7 by 2030. The options to position the country as regional hub and laboratory for the testing of innovative sustainable energy (island) solutions will be assessed. In this context, the potential hosting of the Central African Centre for Renewable Energy and Energy Efficiency (CACREEE) will be studied further. The project focuses primarily on the introduction of new innovative medium-scale RE technologies (e.g. small hydro, grid-connected PV, PV hybrid mini-grids) and EE solutions with high GHG emission reduction and domestic value creation potential. Apart from technological innovation, the project will promote the switch from purely grant financed projects to more blended modalities involving loans and private sector equity.

The project approach pays special attention to the SDG-9 (industrial development and innovation) dimension of SDG-7. This results into a focus on sustainable energy solutions for economic/industrial key sectors (e.g. agriculture, food processing, fishery, tourism) and the strengthening of the productive and innovation capacities of domestic energy businesses and entrepreneurs. The latter requires a balanced consideration of demand-side and supply(ier) side elements throughout policy, investment and capacity building interventions.

The GEF project will also provide the opportunities and the means for STP to make good use of the lessons learned and best practices from Guinea-Bissau and Cabo Verde, who underwent a similar experience and are in the process of addressing similar barriers thanks to GEF intervention.

FIGURE 3: UNIDO theory of change: The uptake of inclusive sustainable energy and climate technology markets in developing countries requires equal emphasis on demand- and supply-side actions



➔ Project approach

In line with the proposed alternative scenario, the GEF project focuses on the mitigation of the barriers hindering the uptake of sustainable energy technology markets in STP. The project will, with a relatively small GEF grant, have significant impact and leverage co-financing from the public and private sector. The project will adopt an inter-disciplinary approach involving national Ministries and institutions, academia and research centres, industrial associations, financing institutions, foundations, venture capitalists and utilities.

The proposed approach is fully in line with Objective 1 of the GEF-6 Climate Mitigation Strategy, which aims to promote innovation, technology transfer, and supportive policies and strategies, with Program 1 focusing specifically on the promotion of the timely development, demonstration, and financing of low-carbon technologies and mitigation options. It responds also to the GEF Private Sector Strategy. The GEF-6 private sector engagement approach supports private or public energy service companies and SMEs to promote RE and EE. In order to reach the project’s objective, four project components (PC) are proposed (Figure 4 depicts the intervention of the GEF/UNIDO project):

Project Component 1 (PC1): Policy, legal and regulatory framework for sustainable energy

Project Component 2 (PC2): Sustainable energy investment promotion

Project Component 3 (PC3): Qualification and Certification framework for sustainable energy

Project Component 4 (PC4): Project monitoring and evaluation

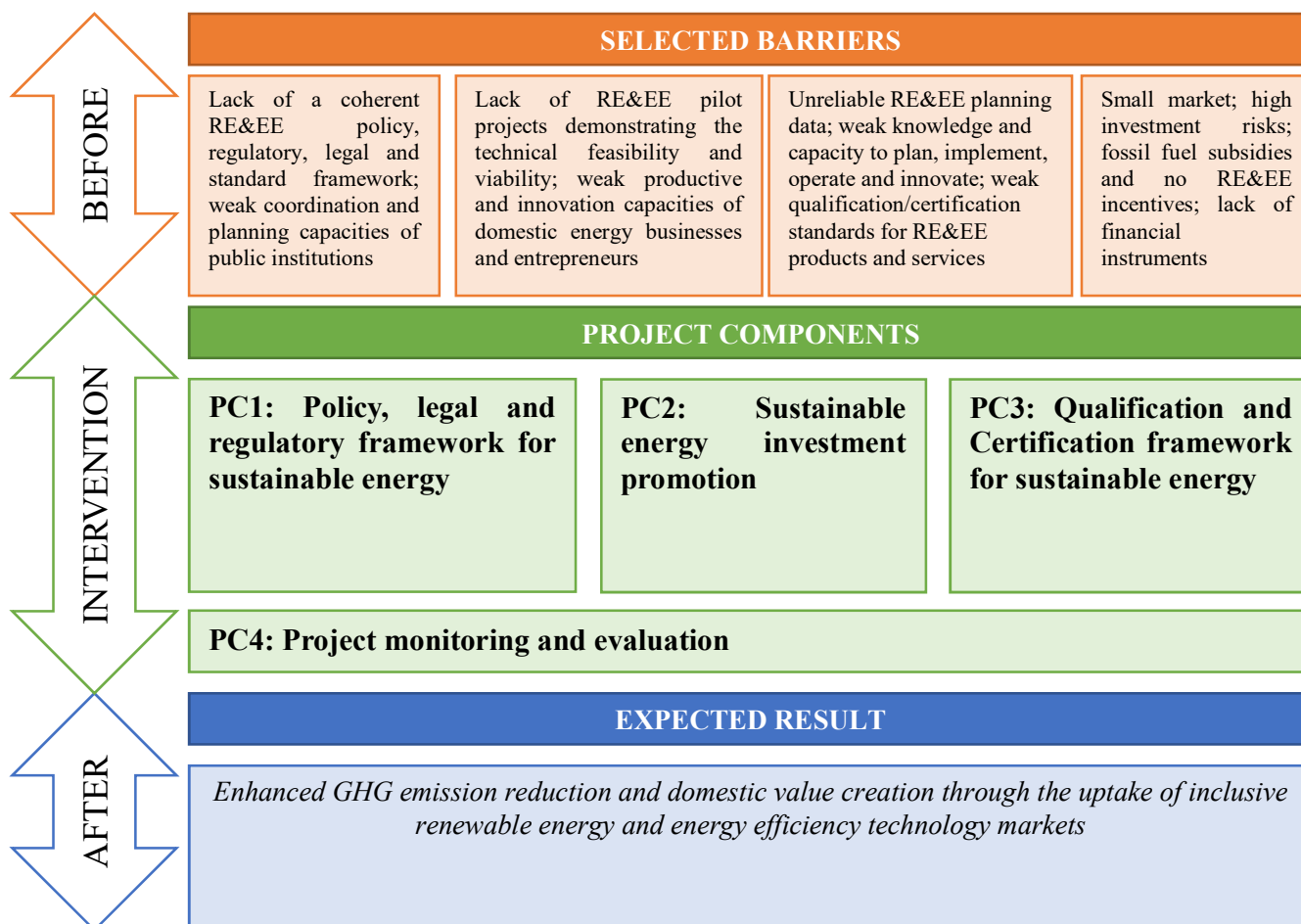


FIGURE 4: PROJECT COMPONENTS INTERVENTION

Project implementation will be monitored and evaluated continuously. The monitoring methodology will be conducted on a periodic basis in line with the GEF, UNIDO and Government requirements. A detailed description of the activities under this component is provided in Part II, section C: Describe the Budgeted M&E Plan. The following section will provide a detailed description of the project components:

Project Component 1 (PC1): Policy, legal and regulatory framework for sustainable energy

Expected outcome 1: Accelerated RE&EE market development through improved policy and regulatory framework and effective public-private coordination

The objective of PC1 is to strengthen the capacities of the Government to plan, implement and coordinate the power sector and the RE&EE market integration. Moreover, it aims at improving the existing policy, regulatory and incentive framework for RE&EE integration. A National Sustainable Energy Platform (NSEP) to improve public-private coordination will be established. Based on socio-economic and technical potential assessments, the project will support the development of RE&EE Access action plans demonstrating how to achieve and/or readjust set targets. Under the investment component a sustainable energy investment plan with priority projects to operationalise the set targets will be developed. Concrete laws, regulations and fiscal and non-fiscal RE&EE incentives targeting private sector investments will be proposed.

Under the project, the Government will develop a coherent vision and road-map on how to achieve SDG-7 by 2030. The options to position the country as regional hub and laboratory for the testing of innovative sustainable energy (island) solutions will be assessed. In this context, the potential hosting of the Central African Centre for Renewable Energy and Energy Efficiency (CACREEE) will be studied further.

The component focuses primarily on the introduction of new innovative medium-scale RE technologies (e.g. small hydro, grid-connected PV, PV hybrid mini-grids) and EE solutions with high GHG emission reduction and domestic value creation potential. Apart from technological innovation, the project will promote the switch from purely grant financed projects to more blended modalities involving loans and private sector equity. UNIDO will closely coordinate with the envisaged policy activities of the

GEF/UNDP and World Bank projects. The UNIDO/GEF policy interventions will focus more on the EE and RE technology areas currently not covered by UNDP project (e.g. solar thermal).

Output 1.1. Coherent national sustainable energy policies with RE&EE targets established and under implementation

Activity 1.1.1 Establishment of a National Sustainable Energy Platform (NSEP)

To improve the capacities of the Government to plan, implement and coordinate the energy/power sector and RE&EE integration, the NSEP will be established. This national platform will also contribute to increase ownership of the Government and decrease duplication and fragmentation of donors' support. The platform will include representatives of public and private institutions operating/involved directly and indirectly in STP energy sector (including NGOs and Civil Society Organisations (CSOs)). It is envisaged that the NSEP will meet on a regular basis. At least it will bring together the following institutions: MIRNA/DGRNE, MIRNA/DGA (Directorate General of the Environment), AGER, EMAE, AFAP, UNDP, AfDB, National Institute for Gender Equality Promotion (*Instituto Nacional para a Promoção da Igualdade e da Equidade de Género*, INPIEG), ALER. The platform will be hosted and coordinated by the MIRNA/DGRNE. Depending on the issues to be discussed and analysed other stakeholders will be invited to attend the meetings (e.g. financial institutions, NGO, CSOs).

The NSEP will coordinate and support the following activities:

- Guide the detailed analysis on the gaps in the STP policy, legal and regulatory framework; track ongoing projects/initiatives and provide recommendations on how to promote better coordination;
- Discuss and analyse recommendations on how to improve policy and regulatory environment to promote sustainable energy in STP
- Provide guidance and inputs for the national RE and EE policy documents.
- Provide guidance and inputs for the development of the package of incentives to support RE and EE
- Provide guidance and inputs for the development of EE standards for electric appliances
- Discuss and provide input for the GIS based National RE Mapping
- Discuss and contribute towards the development of the National Sustainable Energy Investment Plan (NSEIP)
- Discuss and contribute towards the creation of a National RE Facility for Sustainable Energy projects
- Encourage the mainstreaming of the gender dimension into the energy policy, legal and regulatory framework as well as into sustainable energy initiatives
- Establishment of an Energy Sector Database (expanding the to-be-created Electric Power Database under the GEF/UNDP project "*Promotion of environmentally sustainable and climate-resilient grid-based / isolated hydroelectric electricity through an integrated approach in STP*")
- Creation and maintenance of a website for dissemination of information and awareness raising on the energy sector and energy sector activities (including GEF/UNIDO project activities and its deliverables and other on-going projects)

The NSEP will decide when and how to involve the private sector in the discussions attaining the development of policies and regulations. A strong coordination effort will be needed in order to organise and guide the NSEP work towards the final goal of improving the policy, legal and regulatory environment. With this in mind, establishing and improving mechanisms for synergy building, information sharing, shared awareness and advocacy is advisable. The mechanism can comprise:

- Conducting scheduled meetings among NSEP members, having in mind the following suggestions:
 - Each participating institution/entity should select a focal point and alternate to attend the NSEP meetings;
 - The NSEP host (MIRNA/DGRNE) supported by the Project Management Unit (PMU) should be responsible for scheduling meetings and send meeting documents in time (at least 7 days before the meeting).
 - The NSEP work should be coordinated by MIRNA/DGNRE. During the meetings, activities and tasks to be conducted should be identified and assigned to the corresponding members (entities), indicating objectives, critical path activities, milestones and deadlines to be fulfilled.
 - Develop and coordinate the adoption of the meeting minutes.
- Creating a computer-based information sharing and storage tool within the Website to which members can have access to (with a specific login function). If members are allowed to upload/modify information they should inform the NSEP Coordinator.
- Creating a communication protocol to be followed by NSEP members.

- Sharing the outcomes/actions of the NSEP with the public through the Website
- Apply best practices in Good Governance to ensure intended outcomes are achieved. The function of good governance in the public sector is to ensure that entities act in the public interest at all times. This requires:
 - Strong commitment and integrity, ethical values, and the rule of law; and
 - Openness and comprehensive stakeholder engagement;
 - Defining outcomes in terms of sustainable economic, social and environmental benefits;
 - Determining the interventions necessary to optimize the achievement of intended outcomes;
 - Developing the capacity of the entity, including the capability of its leadership and the individuals within it;
 - Managing risks and performance through robust internal control and strong public financial management; and
 - Implementing good practices in transparency and reporting to deliver effective accountability;

Women of the respective institutions and entities will be encouraged to participate in the NSEP, in order to promote equal opportunities for women and men. It is envisaged that, through the joint participation and discussions carried out under this Activity, the national ownership on energy sector planning, coordination and RE&EE integration is strengthened. In addition, the creation of the NSEP, the Website and the Energy Sector Database are expected to benefit the cooperation and coordination of efforts between the public sector and the private sector.

As the establishment/improvement of the policy and regulatory framework will be an activity that will be carried out throughout the entire project, the NSEP will meet 2 times a year during the GEF/UNIDO project. These meetings will be half-day working meetings where the involved Consultants and the PMU will be invited to present results of the Activities 1.1.2 to 1.1.7 and the results of the activities of other outputs of PC1 and others that may contribute directly and indirectly to the improvement of the legal, policy and regulatory framework as well as to share the experience of implementing the policies and frameworks developed throughout the project and on synergetic projects. This will allow the project to adapt the developed and improved policies to the changing environment.

Activity 1.1.2. Establishment of a Website and Energy Sector Database

Information on the energy sector is scarce and spread across the sectors. Also, there is no harmonised way of collecting data and there is no validation of the current data on the energy sector. Energy data is crucial for the development of any plan and policy, analysis and reports (e.g. GHG Communications to the UNFCCC, etc). It is also crucial to reduce the market entry costs and investment risks of project developers and potential financiers.

MIRNA/DGRNE requires support for the establishment of its website and energy sector database and information system. The GEF/UNIDO project will support MIRNA/DGRNE in the development of a Website with an integrated Energy Sector Database and Information System. It will improve the accessibility of key stakeholders to essential energy data and information. The information portal will:

- Centralise and validate the information on the energy sector (demand, generation of past years, installed capacity as well as predicted in the future);
- Make information available on the energy sector legal and regulatory framework as well as on the sector's plans and strategies for the future.
- Provide investment relevant data on RE&EE projects and potentials; all information generated by the GEF project will be uploaded, incl. the GIS based renewable energy potential assessment undertaken under the investment component;
- Link data through "open data" to other international and regional platforms (e.g. ECREEE, IRENA);

Under the GEF/UNDP project "*Promotion of environmentally sustainable and climate-resilient grid-based / isolated hydroelectric electricity through an integrated approach in STP*" it is expected that some support will be provided to the definition of the database. The GEF/UNIDO project will work with the GEF/UNDP project in the establishment of this database and in associating it to the Website, which will be the instrument used for the communication and dissemination of the gathered and treated information. Additionally, this activity will count with support from ALER (Associação Lusófona de Energias Renováveis) for its conduction.

The Energy Sector Database could be a simpler version of the "Energy Observatory" that was recently launched by ADENE (the Portuguese Energy Agency) in Portugal (<https://www.observatoriodaenergia.pt/pt>). Also, the GIS based ECOWAS Observatory for Renewable Energy and Energy Efficiency (ECOWREX) is taken under consideration (www.ecowrex.org) as potential tool to collect and disseminate data on STP. The options will be evaluated in partnership with ECREEE.

The design of the Website and the associated Energy Sector Database will be done by Consultant/s guided by MIRNA/DGRNE, and the PMU. Additionally, as mentioned before, the activity will be developed with support from ALER. The maintenance and the updating of the Website and Energy Sector Database content/information will be carried out during the project as a joint task of the PMU and a technician from the MIRNA/DGRNE appointed for it. From time to time, support from an IT Consultant will be required (he/she will be hired to provide one or two days of support to the platform each month).

Activity 1.1.3 The existent policy, legal and regulatory framework for RE and EE is reviewed, and gaps and opportunities identified

Regarding the policy and regulatory framework, a RE&EE gap analysis will be conducted. It will be based on the findings of the Baseline Report (Annex K)¹⁷ developed during the PPG phase, the RE Potential Resource Mapping developed under PC2 of the GEF/UNIDO project, outputs of the STP PSRP and of the GEF/UNDP project “*Promotion of environmentally sustainable and climate-resilient grid-based / isolated hydroelectric electricity through an integrated approach in STP*”. At the moment, STP has no laws, plans/strategies or regulations towards RE and EE in place, although the Government of STP (through MIRNA, EMAE and AGER) has set up targets for RE for 2020 and 2030 in its NDC.

Within this analysis the existing institutional documents of the energy sector and of other sectors (such as environmental sector, infrastructure development/building sector etc.) that refer to RE and EE will be analysed in depth as well as the existing institutional framework (responsible bodies and responsibilities). The gap analysis will also look into how gender, environmental protection and youth are integrated and being addressed in the electricity sector.

This will enable to understand the regulatory and institutional framework barriers and opportunities that exist in the country. Recommendations will be put forward to overcome those barriers. Within this, and as energy is a transversal issue to other sectors of the economy, recommendations will also be drawn on how to integrate RE and EE into the economic and social sectors (such as education, health, environment and industry, amongst others), including recommendations on how to integrate gender issues in the development of RE and EE projects.

The findings of this Gap Analysis and Recommendations analysis will be summarised in a report that will be presented and discussed with STP stakeholders at a workshop (see activity 1.1.2). This will enable to gather feedback and inputs from different stakeholders on the report and its findings, as well as to discuss and refine the recommendations put forward to address the identified barriers. With the collected feedback, the final Gap Analysis and Recommendations report will be compiled to inform the development of the National EE policy, the Sustainable Energy for All Action Agenda (SEforAll AA) (Activity 1.1.5), the incentive package (Output 1.2) and the EE standards for electric appliances (Output 1.3). Consultant/s with capabilities in policy development will lead this activity with inputs from the PMU.

Activity 1.1.4 Workshop on the Gap Analysis and Recommendations

The results of the gap analysis, identification of barriers and the proposed recommendations will be presented and discussed with key stakeholders of the energy sector and representatives from other interested sectors at a ½ day workshop. This workshop will be held with relevant governmental agencies, EMAE, NGOs and potential (private and public) project developers. This will be important as it will serve to validate the work carried out under Activity 1.1.2, as well as to discuss and agree on the recommendations on how to overcome the barriers and establish a legal and regulatory framework conducive to the adoption of sustainable energy solutions (RE and EE). Consultant/s with capabilities in policy development will lead this activity with inputs from the PMU.

Activity 1.1.5 Development of the National RE and EE policy

The following activity will facilitate the development of National Renewable Energy and Energy Efficiency Action Plans and the SEforAll Action Agenda. A similar activity was already supported by the GEF in other SIDS, such as Cabo Verde and Guinea-Bissau. A close cooperation with the GEF/UNDP project “*Promotion of environmentally sustainable and climate-resilient grid-based / isolated hydroelectric electricity through an integrated approach in STP*” will be established. Since UNDP will focus on the National Renewable Energy Action Plan (NREAP), the UNIDO project will focus on RE areas not covered by UNDP (e.g. solar-thermal) and the development of the National EE Action Plan (NEEAP) and the SEforAll AA.

The STP NEEAP, NREAP and SEforAll AA will include RE (including grid-connected and off-grid RE targets, improve access to energy for the population, use of RE resources, etc), EE (grid loss reductions, efficiency of energy production systems, etc) and access targets (universal access) by 2020 and 2030. Besides the goals and targets, the plans will clearly define the trajectories for target achievement and highlight all measures and programmes that will be implemented to achieve those targets. The SEforAll AA will also identify energy nexus initiatives, programmes and projects (for example, energy-water nexus opportunities). The two plans will also identify the need for the development of specific laws and regulations to introduce incentive mechanisms for RE generation and for improvement of efficiency in the electricity sector, as well as capacity and infrastructural needs of the sector.

¹⁷ Annex K-Baseline Report will be superseded with a STP RE and EE Status Report and a GIS-based National RE Resource Mapping both written in English.

Throughout the process, UNIDO will ensure that the SDG-9 dimension of SDG-7 is sufficiently considered in the policies. This includes a special emphasis on the mainstreaming of sustainable energy solutions in economic/industrial key sectors (e.g. agriculture, food-processing, fishery, tourism), as well as the promotion of energy entrepreneurship and innovation to increase the domestic value creation of sustainable energy investments.

The STP NEEAP and SEforAll AA will be prepared using a table of contents and layout that will be agreed previously with MIRNA/DGRNE (that can be based on the NEEAP developed for Cabo Verde and Guinea-Bissau and the SEforAll template and guidance provided by AfDB). This will enable harmonisation of the STP RE and EE plans and SEforAll AA with Cabo Verde and Guinea-Bissau plans.

Table 2 summarises the main contents for the NEEAP and the SEforAll AA.

TABLE 2: MAIN CONTENTS OF STP NEEAP AND SEFORALL AA OF STP

NEEAP main content	<p>Introduction</p> <p>Status quo of EE in the country contemplating: general indicators, total energy consumption and the primary energy consumption</p> <p>Summary of the national EE policies and measures</p> <p>National EE targets and indicators</p> <p>EE potentials</p> <p>Sectoral EE targets and indicators: efficiency in lighting; high performance distribution of electricity; safe sustainable and affordable cooking; EE standards and labelling; EE in buildings; other sectoral EE targets</p> <p>EE innovation and entrepreneurship</p> <p>National public institutions involved in the NEEAP implementation</p> <p>Measures for achieving the targets;</p> <p>Schedule for NEEAP implementation</p> <p>Preparation of the NEEAP</p> <p>Monitoring and follow-up of NEEAP’s implementation</p>
SEforAll AA main content	<p>Executive summary</p> <p>Preamble</p> <p>Introduction</p> <p>Part 1: Vision and Targets until 2030: including energy sector trajectory; energy access target until 2030; RE target until 2030; EE target until 2030; and Relevant nexus targets until 2030</p> <p>Part 2: Priority Action Areas: description for the areas of energy access, RE, EE and additional action areas of the current status and trajectory, existing plans/ strategies and existing gaps; priorities to be addresses to achieve the objectives in the respective areas; high-impact opportunities. This part also should include information on enabling action areas, namely energy planning and policies, business model and technology innovation, finance and risk management; capacity building and knowledge sharing and other priorities.</p> <p>Part 3: Coordination and follow-up: including the description of the national SEforAll coordination structure; follow up analysis; monitoring, evaluation and reporting; link to the Investment Prospectus/Investment strategy (this to be developed under PC2 of this GEF project).</p>

The NEEAP and SEforAll AA will be based on the 2020 and 2030 NDC targets for RE, the STP PSRP, the results of the GIS RE Resource Mapping (resulting from PC2, Output 2.1), the NREAP (if that is developed by then) and the recent Government’s target of having 50% RE in the electricity mix by 2025¹⁸ in order to reach SDG #7.

For the development process of the NEEAP and SEforAll AA, the NSEP (and other national stakeholders) should be convened and consulted on a regular basis, so that they can provide inputs on the directions of the plans as well as to help define the RE, EE and energy access scenarios. It is expected that this NSEP will formally meet at least three times during the process and will also provide inputs on the compiled NEEAP and SEforAll AA drafts, and if possible on the Strategic Plan for the Development of RE in STP. The NSEP members should also be available for one-on-one consultations during the plans’ entire development process.

The NEEAP and SEforAll AA will be developed by Expert/s with capabilities on Policy and Strategy development and with support from MIRNA/DGRNE, the NSEP and AfDB. The NSEIP to be developed under Output 1.2.2 will be directed towards the targets of the NEEAP, SEforAll AA and the Strategic Plan for the Development of RE in STP. The final versions of the NEEAP and SEforAll AA will be presented and validated in a validation workshop (see Activity 1.1.7) with a wider audience of STP stakeholders.

¹⁸ <http://www.aler-renovaveis.org/pt/comunicacao/noticias/o-futuro-de-sao-tome-e-principe-passa-pelas-energias-renovaveis/>

Activity 1.1.6 Monitoring of the implementation of the NEEAP, SEforAll AA and the Strategic Plan for the Development of RE in STP

The day-to-day progress of the implementation of the three plans will be monitored by the PMU. Towards the end of the GEF project a National Evaluator will analyse and report on the status of implementation of the plans. This will include actions implemented, results achieved, lessons learnt, barriers and recommendations for improvement. The results of this analysis will then be presented and discussed at a Workshop (Workshop on the progress of the implementation of the NEEAP, SEforAll AA, the incentive package and EE standards – Activity 1.1.7). Based on the results of the evaluation and the comments received and agreed actions during the workshop, the plans will be improved. The improvement of the plans will be carried out by a Consultant with guidance from MIRNA/DGRNE, NSEP and the PMU.

Activity 1.1.7 Legal and Regulatory Framework Workshops

Within this activity three (3) main workshops will be carried out:

- Validation workshop for the NEEAP and SEforAll AA. The GEF/UNIDO project will try to coordinate with the GEF/UNDP project “*Promotion of environmentally sustainable and climate-resilient grid-based / isolated hydroelectric electricity through and integrated approach in STP*” the validation of these two plans with the validation of the Strategic Plan for the Development of RE in STP.
- Validation workshop for the incentive package and EE standards
- Workshop on the progress of the implementation of the: NEEAP, NREAP, SEforAll AA, incentive package, EE standards and Strategic Plan for the Development of RE in STP.

During the Validation Workshops the draft version of the NREAP, NEEAP and SEforAll AA (developed in Activity 1.1.5) as well as the incentive package (developed in Output 1.2) and the EE standards for electric appliances (developed in Output 1.3) will be presented and discussed with STP stakeholders with the objective of validating all the policy/legal framework documents and standards.

At the Workshop on the Progress of the Implementation of the NREAP, NEEAP, SEforAll AA, incentive package and EE standards, and the Strategic Plan for the Development of RE in STP, the stakeholders will be informed about how the implementation of the developed legislation has been conducted, the results achieved through it and the lessons learnt. Recommendations for their improvement will be discussed and agreed with the stakeholders, to better align the legislation to the achievement and aspiration of STP goals in terms of RE, EE and energy access.

These workshops will be half a day workshops and are estimated to involve the participation of around 40 stakeholders each. The workshops will be organised by the PMU and supported by the Consultants that worked on the documents to be validated / presented.

Output 1.2. Proposals for sustainable energy legislation, standards and a package of incentives developed and their implementation facilitated

Activity 1.2.1 Development of the package of incentives, secondary legislation and standards

Article 51 of the DL n.26/2014, relative to the “Special Incentives for the Production of Electricity” refers that:

- “1. The production of electricity maybe objective of special incentive regimes, with the aim to: foster energy efficiency; foster the reduction of fossil fuel consumption; promote the use of RE; protect the environment; and support the technological development”*
- 2. That the special incentive regime is to be developed in complementary legislation and that these last ones should contemplate the eligibility criteria and application modes of the incentives; and the nature of the incentive to the investment, production or both as well as the respective timetable and other conditions.*
- 3. That the special incentive regimes may include the possibility to establish preferential conditions for certain projects to be recognised as projects of national interest due to its innovative characteristics.*
- 4. That special incentive regimes associated to guarantees of origin or autonomous tradable titles may be created and provided according to the sources of energy used for electricity generation.*
- 5. That the incentives may be provided for the construction and maintenance of grid infrastructures, including connection capacity;*
- 6. That the additional cost relative to the incentives should be specified in the consumers invoice and included in the tariff system.”*

Thus, although the DL refers that the incentives should be created in secondary laws, these secondary laws still do not exist. Moreover, there are no incentives or regulations regarding the RE based electrification through mini-grids. In addition, although there is a recognition and ambition that the energy sector should be liberalised, and that the participation of the private sector is key for the development of the energy sector, there is an absence of standard procedures (such as Power Purchase Agreements) to guide the involvement of Independent Power Producers (IPPs) or Public Private Partnerships (PPPs) as well as a lack of clarity in relation to the licencing processes for RE and EE projects.

The newly restructured GEF/UNDP project “*Promotion of environmentally sustainable and climate-resilient grid-based hydroelectric electricity through an integrated approach in STP*” will work on the definition of some of these incentives, namely:

- Regulation for interconnection: definition of the purchase relationship between a private operator and EMAE;
- Prepare a Manual on Technical and Administrative procedures for private energy operators from all sources of RE to connect to the grid;
- Elaboration of the Sanctioning Regime;
- Study on sustainable tariffs for investments in energy production in isolated rural networks and identification of different incentive mechanisms for RE producers.

Thus, and having all of this into account, there is a need to develop/complement secondary legislation for the creation of incentives and standards that will support the development of RE and EE and its integration to the energy sector. Also, although the DL n.26/2014 makes the provision for the creation of a series of incentives, there is a need to, first of all, carry out a study or studies that analyse:

- What incentives (fiscal and other incentives) should be put forward for the development/implementation of EE projects and to promote sustainable access to electricity (RE mini-grid systems for example) and what will the expected impact of these incentives be in the electricity tariff that will be charged to the consumers? (this study should complement the “Study on sustainable tariffs for investment in energy production in isolated rural networks and identification of different incentive mechanism for RE producers” that will be developed with GEF/UNDP support).
- To what type of projects and up until what capacity should the special incentive regimes be provided?
- If guarantees of origin or autonomous tradable certificates are provided, how will they be allocated? How will those tradable certificates be used/how and when can they be traded? What will their value be? How will this market function / operate? What will be the impact for the consumers?
- Shouldn't feed-in-tariff system or quota systems for RE be considered for STP?
- Should other fiscal incentives (e.g. waive of duty for RE and EE equipment) and non-fiscal incentives, be put forward? If so, how would that work?
- What should be the support mechanism for IPPs and PPPs and how those should be put in place and advertised (including the analysis of the establishment of a standardized PPA; the development of guidelines for IPP and for PPP for the development of RE and EE projects in STP, among others)? (this should complement the “Manual on Technical and Administrative procedures for private energy operators from all sources of RE to connect to the grid” that will be developed with GEF/UNDP support)
- How would the licencing process for RE and EE look like? (this should complement the “Manual on Technical and Administrative procedures for private energy operators from all sources of RE to connect to the grid” that will be developed with GEF/UNDP support)
- What would be the best package of incentives and the implications for the population?
- Do RE/EE products and services offered in the market need to comply with qualification standards or be certified under which standards? (complementary standards may need to be developed)

These studies should be carried out by Consultants with the support and guidance from MIRNA/DGRNE and AGER. The results of the studies should be presented to MIRNA/DGRNE and AGER as well as to the NSEP in order to collect feedback and establish a package of incentives that should be adopted in STP. Once the package of incentives is defined and agreed among all the stakeholders, proposals for secondary legislation for the creation and implementation of these instruments, as well as complementary quality/certification standards for RE/EE products and services, will be created by the International and National consultants and submitted to Government institutions for revision, approval and adoption.

During the definition of this package of incentives, a schedule for their implementation as well as the responsible entities for their provision and monitoring of their implementation will be pointed out. These studies, instruments, standards and respective secondary

legislation should be then presented and validated by a wider group of stakeholders at the Validation Workshop for the incentive package and EE standards (Activity 1.1.7).

Activity 1.2.2 Monitoring of the implementation of the incentive package

The day-to-day progress of the implementation of the incentive package will be monitored by the PMU. Towards the end of the GEF project, a National Evaluator will analyse and report on the status of implementation of the incentive package. This will include, actions implemented, results achieved, lessons learnt, barriers faced, and recommendations for improvement.

The results of this analysis will then be presented and discussed at a Workshop (Workshop on the progress of the implementation of the NREAP, NEEAP, SEforAll AA, incentive package and EE standards – Activity 1.1.5). Based on the results of the evaluation, the comments received and agreed actions during the workshop, the analysed secondary legislation will be improved. These improvements will be carried out by a Consultant with guidance from MIRNA/DGRNE, AGER and the NSEP.

Output 1.3. EE standards for electric appliances are developed and their implementation facilitated

Activity 1.3.1 Development of EE standards for electric appliances

So far, the Government has not set any specific targets or standards for EE. The annual work plans of the Government “*Grandes Opções do Plano*” just speak about the need to establish an EE program. Moreover, the DL n.26/2014 also refers that they want to improve the quality of the electricity system, promote EE, increase environmental sustainability and contribute to the reduction of the energy dependency of the country.

According to the Baseline Report (see Annex K), although electricity access in STP is 74.5% the electricity generation and supply system is very inefficient. There are a lot of cuts on electricity supply, technical difficulties associated with the maintenance of the electricity generators as well as there are several electricity generators not operational. Moreover, the MV and LV grid system is very degraded and there are significant losses in supplying the electricity to the final consumers (the majority of the final electricity consumers do not have meters to measure electricity consumption). It is estimated that the losses of the electricity systems are of around 40% considering both technical and non-technical (commercial) losses.

Thus, the GEF/UNIDO project will develop EE standards for electric appliances (particularly air conditioning and lighting) with potential to reduce the peak load demand towards the reduction of technical and non-technical losses in the transmission and distribution system. Moreover, particular emphasis will be laid also on the promotion of solar-thermal water heaters to replace inefficient electric water heaters in the tourism and hospitality sector.

These standards will be developed by Consultant/s with guidance from MIRNA/DGRNE, AGER, the NSEP and the PMU. The draft version of the standards will be presented at the Validation Workshop for the incentive package and EE standards. The inputs gathered will be used to compile the final version of the standards that will be submitted to the Government of STP for endorsement.

Activity 1.3.2 Monitoring of the implementation of the EE standards for electric appliances

The day-to-day progress of the implementation of the EE standards for electric appliances will be monitored by the PMU. Towards the end of the GEF project, a National Evaluator will analyse and report on the status of implementation of these standards. This will include actions implemented, results achieved, lessons learnt, barriers faced and recommendations for improvement.

The results of this analysis will then be presented and discussed at a Workshop (Workshop on the progress of the implementation of the NREAP (Strategic Plan for the Development of RE in STP), NEEAP, SEforAll AA, incentive package and EE standards – Activity 1.1.5). Based on the results of the evaluation, the comments received and agreed actions during the workshop, the standards will be improved. These improvements will be carried out by a Consultant with guidance from MIRNA/DGRNE, AGER, the NSEP and the PMU.

Output 1.4. Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration

Activity 1.4.1 Establishment and facilitation of the implementation of the awareness raising campaign “SEforAll for STP”

Awareness raising and information sharing on sustainable energy such as RE and EE, but especially on EE, has been highlighted by STP stakeholders as a very important issue for the country to be addressed. On the RE side, although the hydro resource potential is abundant and recognised as such in STP, it is also important to look into other RE resources that can contribute to balance out the country energy mix as well as look into other RE solutions for areas isolated from the grid, and where the hydro potential is not the best to satisfy the demand. Moreover, it seems that for example, solar thermal is not seen as an option for water heating at hotels and commercial/industrial establishments that need hot water for their activities with such an abundant solar resource. It is important to raise awareness on the existence of such options and the roles that these can play for the country.

On the EE side, although the Government has the ambition to reduce demand and become more efficient in terms of energy production, transmission and supply, so far, little has been done to achieve this. In addition, for the country to become more efficient there is a need to change the general behaviour of the population that can only be achieved through a well carried out and continuous awareness/information campaign on EE.

In cooperation with ECREEE, SIDS DOCK and ALER, the GEF/UNIDO project will establish and support the implementation of the “SEforAll for STP” awareness campaign. This campaign aims at raising awareness on the project and project activities; raising awareness on RE technologies (mini-hydro, solar, wind, solar thermal, bioenergy, etc) and the importance and opportunities for the adoption of EE measures/technologies to reduce energy consumption and unnecessary waste of energy; on raising funding and technical support from international partners for the implementation of the STP NSEIP and other activities to be undertaken by the GEF/UNIDO project. In this context, one investment workshop in Lisbon and one sustainable energy conference and expo will be organized in cooperation with ALER and ECREEE in conjunction with the presentation of the National Sustainable Energy Investment Plan (see activity 2.2.2).

ECREEE has already implemented a series of awareness raising campaigns on RE and EE, and a specific campaign on solar thermal energy, and will support the implementation of this activity by transferring its knowledge and lessons learnt from the implementation of those campaigns in the ECOWAS regions, particularly in Cabo Verde and Guinea-Bissau. Thus, this activity will be implemented with the PMO in cooperation with ECREEE and Consultants.

Under this activity, also the options to position the country as regional hub and laboratory for the testing of innovative sustainable energy (island) solutions will be assessed. At the moment, UNIDO together with the Economic Community of Central African States (ECCAS) is looking into the possibility of establishing a Central Africa Centre for RE and EE (CACREEE) to promote RE and EE in Central Africa of which STP is part of. In Within this activity a Study on the Potential and Options for STP to be the host for CACREEE will be conducted, presented and discussed at the NSEP. This will be conducted through a subcontract with a Consultant and will be coordinated by the PMU and the NSEP.

The following table summarises the outputs and activities of PC1.

Project Component 1: Policy, legal and regulatory framework for sustainable energy

Outcome 1: Accelerated RE&EE market development through improved policy and regulatory framework and effective public-private coordination

PC1 is directed at adjusting the policy and institutional framework in order to promote the adoption of sustainable energy solutions (RE and EE) in STP for improved market development

Output 1.1: Coherent national sustainable energy policies with RE&EE targets established and under implementation

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 1.1.1 Establishment of a National Sustainable Energy Platform (NSEP)</u>	MIRNA/DGRNE MIRNA/DGA, AGER, EMAE, AFAP, UNDP, AfDB, INPIEG, etc Consultant PMU
<u>Activity 1.1.2. Establishment of a Website and Energy Sector Database</u>	MIRNA/DGRNE ALER ECREEE (ECOWREX) Consultant/s PMU
<u>Activity 1.1.3 The existent policy, legal and regulatory framework for RE and EE is reviewed, and gaps and opportunities identified</u>	Consultants PMU
<u>Activity 1.1.4. Workshop on the Gap Analysis and Recommendations</u>	Consultants PMU
<u>Activity 1.1.5. Development of the National RE and EE policy</u>	Consultants MIRNA/DGRNE NSEP AfDB
<u>Activity 1.1.6. Monitoring of the implementation of the NEEAP, SEforAll AA and the Strategic Plan for the Development of RE in STP</u>	National Evaluator MIRNA/DGRNE NSEP

	PMU
<u>Activity 1.1.7 Legal and Regulatory Framework Workshops</u>	Consultants PMU
<i>Output 1.2: Proposals for sustainable energy legislation, standards and a package of incentives developed, and their implementation facilitated</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 1.2.1 Development of the package of incentives, secondary legislation and standards</u>	Consultants NSEP MIRNA/DGRNE and AGER PMU
<u>Activity 1.2.2 Monitoring of the implementation of the incentive package</u>	National Evaluator MIRNA/DGRNE and AGER NSEP PMU
<i>Output 1.3: EE standards for electric appliances are developed and their implementation facilitated</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 1.3.1. Development of EE standards for electrical appliances</u>	Consultants NSEP MIRNA/DGRNE and AGER
<u>Activity 1.3.2. Monitoring of the implementation of the EE standards for electrical appliances</u>	National Evaluator MIRNA/DGRNE and AGER NSEP PMU
<i>Output 1.4: Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 1.4.1 Establishment and facilitation of the implementation of the awareness raising campaign “SEforAll for STP”</u>	ALER ECREEE Consultants PMU

Project Component 2 (PC2): Sustainable energy investment promotion

Expected outcome 2: Increased investments in sustainable energy infrastructure and businesses

This component aims at creating and facilitating the implementation of a sound and enabling national investment framework for sustainable energy solutions (RE and EE infrastructure and businesses) with a strong replication and leverage effect. The GEF/UNIDO project will particularly focus on project preparation and bundling, as well as technology demonstration.

This will be achieved through:

- The development of a Status Report of RE and EE in STP and of the GIS-based Renewable Resources Mapping;
- The development of a National Sustainable Energy Investment Plan (NSEIP) and its presentation to potential investors in two investment forums;
- The deployment of sustainable energy (RE and EE) investment projects in STP;
- The creation of a Financial Facility for Sustainable Energy Investment projects in STP;

Output 2.1. The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated

Activity 2.1.1. A Status Report of RE and EE in STP and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated

Having the Baseline Report as a starting point (Annex K), as well as existent information from other on-going projects (the March 2018 Mission Report to STP of the International Hydro Power Expert (see it included in Annex K)), the Water Resource Management Plan, the LCPDP developed by the WB, the STP Hydroelectric Inventory to be developed by the GEF/UNDP project “Promotion of

environmentally sustainable and climate-resilient grid-based hydroelectric electricity through an integrated approach in STP”), the present GEF/UNIDO project will carry out the development of: (i) a STP RE and EE Status Report; and (ii) a GIS-based National RE Resource Mapping identifying high-impact priority sites, which will be widely disseminated.

The STP RE and EE Status Report will be developed and completed at the start of the GEF/UNIDO project. The GIS-based National RE Resource Mapping will be developed simultaneously with the development of the NEEAP, the SEforAll AA, and the Strategic Plan for the Development of RE in STP (the latter to be developed with support from the GEF/UNDP) as the information of this analysis should be used to support the establishment of the goals and targets in terms of RE for the country. The GIS-based National RE Resource Mapping will identify and provide basic information (e.g. geo-coordinates, size, costs) about on- and off-grid priority sites in various RE technology areas (e.g. hydro, bioenergy, PV, wind). The resource mapping will provide essential information to better plan the interplay between grid-connected and off-grid options. The generated information will be fed into the energy database and information system to be developed under the policy component of the GEF project.

The STP RE and EE Status Report will be developed with support from ALER and will initially follow a structure similar to the Baseline Report included in Annex K. The STP RE and EE Report structure will be defined by ALER and other executing partners involved. However, a suggested scope may include as main topics of study:

- Country geographical and socio-economic context (including main economic, population, gender-related indicators, indexes, etc.),
- Legal, policy, regulatory (including fiscal) and standardization framework of STP for RE and EE promotion, targets. Particular emphasis on gender will be laid.
- Characterisation of the institutional framework and private / public sector actors involved in the energy sector of STP (e.g. Ministries, Directorates, Utilities, IPPs, PPPs, Associations (e.g. RE, EE, engineering, professionals, etc.), NGOs, CSOs, etc.) and evaluation of improvements to the current framework such as defining responsibilities of the different actors, creating new organisations, etc.
- Energy sector profile (energy generation, infrastructure, demand and consumption structure, growth trends, installed capacity, RE use, EE measures undertaken, future projects and investments in RE/EE, targets to be achieved in terms of RE/EE, etc.)
- RE and EE markets development, barriers and needs, products and services offered and demand, products and services certification standards, etc.

The GIS-based National RE Resource Mapping will be developed by Experts with knowledge on GIS mapping. The mapping and the STP RE and EE Status Report will be used for the development of the plans described in PC1 and for the development of the NSEIP. Both documents will be disseminated through the MIRNA/DGRNE Website, ECOWREX, ALER and UNIDO websites.

Output 2.2. A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums

Activity 2.2.1. Development of the National Sustainable Energy Investment Plan (NSEIP)

The results of PC1 and of Activity 2.1.1 will be used for the development of the STP NSEIP. The NSEIP will comprise a project pipeline directed to attain the STP RE, EE and energy access targets set up in the plans and policies developed under PC1 and in the NDC. It is envisaged that the plan will include a list of projects with information on project promoters, project development status, the need for additional studies, the scale of capital expenditure required, the possible returns on investment that are available, mapping of financing resources and the definition of fundraising activities. The plan will be used to attract local and international financiers and donors to invest in the sustainable energy sector in STP. The NSEIP will focus on grid-connected and off-grid small to medium scale RE projects.

The following steps will be taken for the compilation of the NSEIP:

- Project pipeline / Investment Prospectus (IP) development: the pipeline presents to individual investors, investment organizations, donors, and bankers all the basic, but critical, project information for their consideration of an investment opportunity. The pipeline showcases private and public-sector projects that need full or gap financing, as well as public sector technical assistance needs for enhancement of the enabling environment. It is a dynamic document that captures funding opportunities arising from: (i) adjustment to changing priorities on the basis of future reviews of strategies/plans/programs, (ii) projects currently in a portfolio and (iii) additional projects generated from existing or new sustainable energy programs. In short, the portfolio is a snapshot of sustainable energy projects at a specific point in time, and a flexible vehicle to showcase evolving investment opportunities to funders, financiers and other stakeholders. Each of the projects contemplated in the pipeline will have a Project Fiche that summarises the details of the project.

The pipeline of projects that will be inserted in the NSEIP will be developed following the template of the SEforAll IP. It will use as a primary list of projects the projects identified in Outputs 2.1 and 2.3. The project pipeline is supposed to be continuously updated every time a sustainable energy project is identified.

- **Mapping of financing resources/contributors:** this exercise will identify stakeholders potentially interested in making financial, technical or in-kind contributions to sustainable energy project developments in STP. This exercise is, as well, a dynamic process of identification, classification, and the development and maintenance of relationships with investors. It requires a mechanism to ensure a continuous collection and up-dating of information about different funders, financiers, and donors. Besides the identification of the possible investors, the financing resources mapping will also provide information on the conditions for their investments, including technology, size, ownership, market segment, and other requirements. To carry out this exercise a systematic data collection template will be used so that the same information can be collected from possible investors. As with the pipeline of projects, the financing resources mapping should be continuously updated – not only verifying information on the investors already listed but also adding new ones when identified.
- **Fundraising activities:** raising funds is the critical task to bring mature and bankable projects to financial closure and execution. The NSEIP will put forward a strategy and a plan for fundraising activities, that can include advertising and awareness/information campaigns, meetings, participation in conferences and investment forums etc. In fact, under the GEF/UNIDO project the NSEIP will be presented in at least two forums (see Activity 2.2.2).

The NSEIP will be prepared by a Consultant and the PMU.

Activity 2.2.2. Presentation of the NSEIP to potential investors and financiers in at least two (2) investment forums

In partnership with ALER (Associação Lusófona de Energias Renováveis), and through the awareness raising campaign “SEforAll for STP” (PC1 Output 1.4) the NSEIP will be presented to potential investors and financiers in at least two (2) investment forums, to be carried out in Portugal and STP. STP will also benefit from the experiences of Cabo Verde and Guinea-Bissau which have already developed such investment plans.

The activity will be implemented by ALER and the PMU.

Output 2.3. Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects

Activity 2.3.1. Innovative RE and EE projects (small hydro, solar, wind and/or bioenergy) with a total installed capacity of at least 5 MW are developed to financial closure and their implementation is facilitated

Selected projects of the NSEIP with a total electric capacity of 5 MW (or more) will be brought to financial closure and their implementation will be facilitated with co-finance from the Government of STP, international donors, banks and private investors. The GEF grant will be used to fund the incremental costs of the selected projects. The selected projects will be highly innovative when considering the baseline in STP, as apart from one small-scale hydropower plant (Contador plant) and some PV stand-alone systems (namely used to power communication stations, military signalization, private initiatives, schools and agricultural cooperatives), there are currently no RE systems in operation (detailed information is presented in the Baseline Report in Annex K).

In addition, EE initiatives that can lead to energy and capacity addition savings are also proposed based on the analysis conducted by EDP on Príncipe Island (see Annex K). EE measures could be easily replicated in São Tomé Island in future interventions, conducting to even higher energy savings. These could entail actual EE projects (e.g. replacement of inefficient equipment) as well as behavioural change actions to reduce demand (e.g. turn off appliances or equipment when not in use).

The supported scope of projects will include e.g. grid-connected small-hydro power plants, PV-diesel hybrid systems (up to 2 MW) and replacement of old light bulbs, which will displace electricity production based on diesel and reduce consumption peaks thus eventually having a positive impact on the energy and environment profile of the country and its economy. It is also envisaged to include interventions in the solar-thermal sector for hotels, industrial processes and agriculture (solar dryers). Particular focus will be given to nexus solutions with high local value creation effects as well as to support gender inclusion and women empowerment. Through the implemented projects the feasibility and viability of various RE/EE technologies will be demonstrated.

Knowledge exchange with Cabo Verde and Guinea-Bissau on already implemented PV-diesel mini-grid hybrid projects (e.g. systems in Bambadinca, Bissorã, Monte Trigo) will be established through ECREEE. UNIDO will contribute with its lessons learned from installations undertaken under the GEF Projects “Promoting market-based development of small to medium scale renewable energy systems in Cape Verde” (GEF ID 3923) and “Promoting investments in small to medium scale renewable energy technologies in the electricity sector of Guinea Bissau” (GEF ID 5331).

The PPG phase included the identification of a list of potential RE investment projects comprising approximately 20 MW and EE projects involving electricity savings. A preliminary list identified RE and EE projects (also referred to as *Projects Pipeline*, see Annex J) with a description of their current status and with indication of the available information. During the Mission to STP the majority of the projects identified to be developed as investment projects were hydropower ones (more concretely, rehabilitation of

old hydropower plants), and thus priority will be given to these projects since they would bring immediate benefits. In fact, a specific analysis of the hydropower resources available in both São Tomé and Príncipe Islands was carried out during the 2018 Mission to STP by an International Hydro Power Expert contracted by UNIDO (see Annex K). In addition to hydropower projects some solar projects were also identified by EDP for Principe Island (complete information also available in Annex K).

Table 4 below shows the key features of the selected RE and EE priority projects. Note that due to rounding calculation results, the total result of the emissions reductions may be different from adding up the figures shown in the table.

TABLE 4 includes identified project opportunities that were screened according to their relevance, cost-effectiveness, impacts, available information, recommendations from involved parties and potential for replication (see table with selection criteria). The identified and selected priority projects in Table 4 below shows the key features of the selected RE and EE priority projects. Note that due to rounding calculation results, the total result of the emissions reductions may be different from adding up the figures shown in the table.

TABLE 4 include 6.12 MW of RE projects and some EE projects whose full feasibility still needs to be assessed (see Sub-Activity 2.3.1.1).

In general terms for the hydropower projects, as indicated in the March 2018 Mission Report to STP of the International Hydro Power Expert (Annex K), there is a need to include, in any new study that is conducted, the influence of water extraction and use for other applications (e.g. agriculture, productive uses, domestic consumption of surrounding population) alongside hydropower generation since this has not been included in previous development studies. During the GEF/UNIDO project other RE and EE projects will be identified and added to the *Projects Pipeline* so that they are analysed, and their implementation facilitated.

TABLE 3: INVESTMENT PROJECTS SELECTION CRITERIA

Criterion	Specific Assessment Criteria
Relevance	<ul style="list-style-type: none"> Alignment of the project with national policies and strategies (NDC, STP Vision 2030) and GEF 6 project objectives RE installed capacity (MW) and generated energy (kWh) Reduction in the demand through adoption of EE (kWh) and reduction of the peak load (MW) Financial model adopted by the project
Feasibility	<ul style="list-style-type: none"> Technical feasibility Implementation probability Economic viability Co-finance structure (% of investment sought) Timing for implementation Risks/ barriers for Project implementation and adopted mitigation measures
Cost Effectiveness	<ul style="list-style-type: none"> Cost/kW or kWh
Sustainability	<ul style="list-style-type: none"> Pollution reduction and GHG emission reduction Management model adopted by the project (including maintenance activities)
Impact	<ul style="list-style-type: none"> Social inclusion/social impact (age and sex-disaggregated) Number of beneficiaries Inclusion of gender issues (e.g. % of women benefited by the project, involvement of women in the project development team) Environmental impacts and mitigation measures adopted Diesel savings in terms of costs
Replication potential	<ul style="list-style-type: none"> Scalability: number of inhabitants / businesses that can benefit from this type of projects Ease of Replication

Table 4 below shows the key features of the selected RE and EE priority projects. Note that due to rounding calculation results, the total result of the emissions reductions may be different from adding up the figures shown in the table.

TABLE 4: KEY FEATURES OF THE SELECTED PRIORITY PROJECTS

Renewable Energy Priority Projects						
Location STP	Project Name	Description	Budget for project conduction (USD)	Estimated capacity to be installed (MW)	Estimated energy generation (MWh/year)	Estimated direct GHG emissions reductions (tCO₂/year)
São Tomé Island	Agostinho Neto SHPP	Located on D'Ouro River. The plant was constructed in the colonial times to provide electricity for cocoa production. It was refurbished but after experiencing electromechanical problems the system stopped operating in 2006/2007 and was partially dismantled. Although the building infrastructure is in general good shape, rehabilitation works are still needed. These should be quite straightforward to be done. Issues concerning ownership, management of the plant and water use sharing are to be studied as well. This project has been considered in UNDP project ID 00094537 for immediate refurbishment. The AFAP considers this SHPP as a priority project for further studies.	\$ 706 800.00	0.38	1 340.00	1 173
São Tomé Island	Contador MHPP Capacity extension	Located on Contador River. Current capacity installed and under rehabilitation is 2*960 kW at the Contador HPP. The Power Sector Recovery Project financed by WB is conducting the rehabilitation and optimization works. In 2016, Hidroelectrica STP proposed to double the capacity and reach 4 MW, 280 m head, run-of-river hydropower plant for which additional studies need to be conducted alongside the rehabilitation. In 2014 the plant was able to provide 7.7 MWh which represents approx. 46% use factor.	\$ 5,890,000.00	2.08	9 110.40	7 972
São Tomé Island	GueGue Small Hydropower Plant	Located on Manuel Jorge River. The plant was commissioned in 1941 and rehabilitated in 1993/94 by WB and Sweden. There was a cooperation agreement between EMAE and Transelektra S.A. Operations in 2011 were closed due issues between partners regarding payments. It is next to the grid, civil structures are in good shape and although electromechanical parts need replacement it is a good option for refurbishment. Further studies should include a detailed analysis on potential judicial issues that could still be pending of resolution and on technical aspects related to available water flows due to water resource extraction for other uses. The AFAP considers this SHPP as a priority project for further studies.	\$ 706 800.00	0.32	1 125.46	985

São Tomé Island	Diogo Vaz Micro Hydropower Plant	Located on Águas das Galinhas River, on the Reyes Kakao plantation. Rehabilitation is needed (there are remains of turbine, pipes, machinery, buildings) and new studies concerning joint water usage and sharing approaches with developments in Amambo. The AFAP considers this SHPP as a priority project for further studies.	\$ 57 250.80	0.03	118.00	103
São Tomé Island	Monte Café Micro Hydropower Plant	Located on Manuel Jorge river basin. Still operable but needs rehabilitation works and new engineering design. It was used many years ago for productive uses in the agricultural sector. Currently people are taking water from the headrace and therefore new studies should take into consideration this fact.	\$ 25 444.80	0.01	52.44	46
Príncipe Island	Other hydro sites on Papagaio River*	The Papagaio River basin is the biggest one on Príncipe Island. The hydropower analysis performed by EDP in December 2016 shows four (4) sites of interest along this river. The cost of energy produced is the cheapest in comparison to the rest of the basins, it is close to the grid and is the most attractive basin in terms of potential energy generation. The proposed alternatives (for all the river basins that add up 24 alternatives) were analysed in terms of annual production, installed power as well as energy costs, for different flow rates. Additionally, economic analysis included the estimate of the IRR and the NPV. The analysis done on Papagaio river concludes that two (2) options are the most promising ones (see Annex K, Table 5.15 of EDP Hydro report of Príncipe Island): option 1a and option 2.	\$ 6 103 335.80	1.09	3 060.00	2 339
			\$ 3 912 373.60	0.81	2 300.00	1 758
Príncipe Island	Solar PV-diesel hybrid plant at Airport*	The existing diesel generators can generate electricity in combination with a PV plant to reduce diesel consumption. There is an area identified at the airport (500 m long by 80-100 m wide, a triangle) where the PV panels could be mounted. The soil is good and compact. More detailed studies are needed but the main indicators have been estimated in 2015 (LCOE, OPEX, CAPEX, diesel savings and CO ₂ emission reductions)	\$ 2 238 200.00	1.40	1 400.00	1 070
Total			\$ 19 640 205	6.12	18 505.80	15 445

Energy Efficiency Priority Projects						
Location	Project name	Description	Estimated budget for project conduction (USD)	Estimated electricity savings (MWh/year)	Estimated direct GHG emissions reductions (tCO₂/year)	
Príncipe Island	Replacement of old light bulbs with LED bulbs*	LED lights consume 10% of what an incandescent bulb does and 40% of what a CFL does, therefore it is an attractive option to reduce electricity demand, especially during the night (17.30-23.30 hs) when the peak is very high. Measurements done during this period show a consumption in lighting of 600 kWh with a savings potential of about 420 kWh. The budget corresponds to 3300 LED bulbs of 8 W each.	\$ 35 340.00	111.97	86	
Príncipe	Consumption cut on	The proposal is to switch off the air conditioners at night in public buildings to save	\$ 35 340.00	130.50	100	

Island	Air Conditioning equipment and others*	energy. The estimate was based on night time baseload data for 10 hours consumption for a 50 kVA capacity. The budget corresponds to equipment purchase for 48 energy audits on buildings for 1 year to be carried out by 2 technicians.			
Total			\$ 70 680.00	242.47	185

**project budget for EDP projects are based on the studies conducted for each project by EDP and they will be adjusted when the GEF/UNIDO project implementation starts as stated in the Co-financing Letter (which in fact gives ranges for each project instead of fixed values).*

The investment projects will be developed/implemented under the supervision of the PMU with support from RE & EE Consultants and various specialized subcontractors (e.g. equipment suppliers, etc). The PMU will make sure that important cross-cutting issues such as social and environmental safeguards, gender, conflict-sensitivity and minority rights of disadvantaged population groups are considered during project implementation. The final GEF contributions to the individual investment projects will be determined in cooperation with the co-financiers and final price offers received. The GEF/UNIDO project will closely partner with UNDP, WB, European Investment Bank (EIB) and the African Development Bank (AfDB) to leverage financing for the deployment of the identified projects.

This will include also cooperation with the UNIDO hosted Private Financing Advisory Network (PFAN) regarding the financial structuring of projects and matchmaking with investors. PFAN is a multilateral PPP and identifies promising clean energy projects at an early stage and provides mentoring for development of a business plan, investment pitch, and growth strategy, significantly enhancing the prospect of financial closure. This far, 87 projects have achieved financial closure with over US\$ 1.2 billion of investment raised.

The following sub-activities will be implemented to ensure support for the development of the 6.12 MW of sustainable energy projects is achieved:

Sub-Activity 2.3.1.1) Identification of sustainable energy investment projects to be included in the pipeline

The identification of the sustainable energy investment projects pipeline will be carried out throughout the duration of the GEF/UNIDO project (with stronger emphasis on the first two years of project implementation) by the PMU in cooperation with Consultants, WB, UNDP, AfDB, ECREEE and other development partners. The selection of the projects to be implemented will follow the same criteria as outlined in Table 3. Within this activity it is envisioned that the pipeline will be further expanded, more projects identified and analysed, to be implemented. The projects pipeline and used selection criteria will be available and disseminated through the GEF/UNIDO project's Website. It will be based on the Projects Pipeline included in Annex J.

Sub-Activity 2.3.1.2) Analysis of the technical and economic viability of the identified projects and selection of at least 5 MW of projects to be implemented

The potential sustainable energy investment projects identified in Sub-Activity 2.3.1.1 will be further analysed in terms of technical and economic viability. This will be carried out through the use of already existing tools like RETScreen, Homer and any other software the Consultants consider appropriate. In this analysis, the viability of the projects will be assessed, including technical design, economics, environmental and social benefits (including gender inclusion). Moreover, possible sources of co-finance will be highlighted for each one. This activity will be carried out by the Consultants, coordinated by the PMU. Having in mind the results from the previous sub-activities and the scoring on the different projects regarding the selection criteria, at least 5 MW of sustainable energy investment projects will be selected for implementation. The selection of these projects will be carried out in either one of the NSEP or Project Steering Committee (PSC) meetings, following the recommendations of the PMU and of the Consultants. The selected projects to be implemented will be advertised on the GEF/UNIDO project's Website.

Sub-Activity 2.3.1.3) Finalize the design and procurement documents of the RE and EE investment projects and negotiate the final cost-sharing and co-financiers and promoters

In this sub-activity, procurement documents and financial models to be adopted will be finalised for the selected project feasibility studies. Based on the feasibility studies and procurement documents, the final cost-sharing will be agreed among all financiers. This sub-activity will be carried out by the PMU in cooperation with the Consultants. The assisting Consultants will be hired through a public tender process.

Sub-Activity 2.3.1.4) Provision of technical assistance for the implementation of the investment projects

This sub-activity includes:

- tendering/subcontracting equipment and specialized services for the implementation of the sustainable energy projects; and
- day-to-day management of issues coming up during the transport, installation, commissioning and operation of the projects in cooperation with the co-financiers and the project promoters.

The PMU will be responsible for overseeing the implementation progress of the individual projects. The PMU will coordinate closely with equipment suppliers and executing partners. Regular reporting on the progress of each investment project will be required and provided by the PMU to the NSEP and the PSC.

Activity 2.3.2. Monitoring and evaluation of investment projects

Continuous day-to-day monitoring of the implementation of the investment projects will be required and conducted by the project proponents by using agreed monitoring indicators (the project proponents and the PMU will agree the project monitoring indicators, monitoring frequency and reporting for each project). The PMU will monitor the project operation periodically (in the beginning

every two months until month six and then every six months). The evaluation of the investment projects will be carried out by an Independent Consultant/Evaluator. The PMU will prepare the Terms of Reference (ToR) for the evaluation. Each project evaluation should follow the same reporting structure for this GEF/UNIDO project. This will include as a minimum:

- Assessing the relevance, effectiveness, efficiency, impact and sustainability of the individual projects and respective financial mechanism adopted
- Assessing the commercial operation of the project
- Monitoring and verifying the energy generated and GHG emissions avoided directly due to the GEF/UNIDO project
- Assessing the socio-economic impacts of the projects (by considering gender aspects)
- Identifying faced challenges
- Compiling lessons learnt

Activity 2.3.3. Preparation of case studies and dissemination

For each investment project a case study will be prepared for dissemination and capacity building purposes and also uploaded in the Website. The lessons learned will provide valuable input for the policy development project component (PC1) of this GEF/UNIDO project. This activity will be of the PMU responsibility.

Output 2.4. Based on existing instruments, a Financing Facility is established and supports priority sustainable energy projects and business ideas

Activity 2.4.1. Creation of a Financing Facility for Sustainable Energy Projects and business ideas, and facilitation of calls for proposals under the facility

The GEF/UNIDO project will facilitate the creation of the STP Sustainable Energy Financing Facility (STP-SEFF) which will release regular call for proposals to support RE and EE projects development up to project financial closure as well as to seek possible sources of co-finance. The calls will be funded by the GEF grant and other co-financiers.

UNIDO has experience in setting up and managing this type of financing facilities. In 2011 it has established the ECOWAS Renewable Energy Facility (EREF) operated by ECREEE, which is still operational. The EREF provides seed funding for pre-investment activities (measurements, feasibilities, financial structuring) and business development (e.g. development of business plans) for small to medium scale RE and EE projects in the ECOWAS region. Usually, the EREF provides a limited grant amount (between €5,000 and €100,000) per project. The eligible EREF grant is determined on a project-by-project basis.

The EREF has been used in the establishment of financing facilities similar to the one here proposed, for example, for the GEF Projects “*Promoting market-based development of small to medium scale renewable energy systems in Cape Verde*” (GEF ID 3923) and “*Promoting investments in small to medium scale renewable energy technologies in the electricity sector of Guinea Bissau*” (GEF ID 5331).

In this case, although STP is not part of the ECOWAS region, ECREEE is the focal point for African SIDS within the SIDS-DOCK initiative and therefore it has a mandate to work in STP. Thus, apart from the GEF co-funding and UNIDO experience in setting up and managing this type of financial mechanism, the STP-SEFF will receive support and co-finance from ECREEE/EREF and the regional SIDS-SIDS activities.

The STP-SEFF will provide support for RE&EE project and business development within the scope of this GEF/UNIDO project. Advice and support will be provided to the project developers and start-ups on sourcing finance and, where considered appropriate by the project team, some limited seed finance will be available from the GEF/UNIDO project on a sporadic basis (to a maximum of approx. 10% of project costs) through the STP-SEFF. Technical assistance will be provided during the project development phases up until project financial closure according to the needs identified during the project selection process.

During this GEF/UNIDO project at least one STP-SEFF call for proposals will be undertaken. The STP-SEFF will be used to support the development and facilitate the implementation of the sustainable energy projects identified in Output 2.3, mainly from the end of the first year onwards (as it will have to be established first). The project developers will be responsible for the final designs and the feasibility studies. The RE Consultants will assist. The PMU will be responsible for overseeing each of the new and scaled-up projects and for the disbursement of any TA services and seed finance to these projects.

The organization that will be responsible for managing and operationalising the STP-SEFF will be identified at the start of the GEF/UNIDO project. If such an organization cannot be identified, the STP-SEFF would be managed by ECREEE in close coordination with SIDS-DOCK.

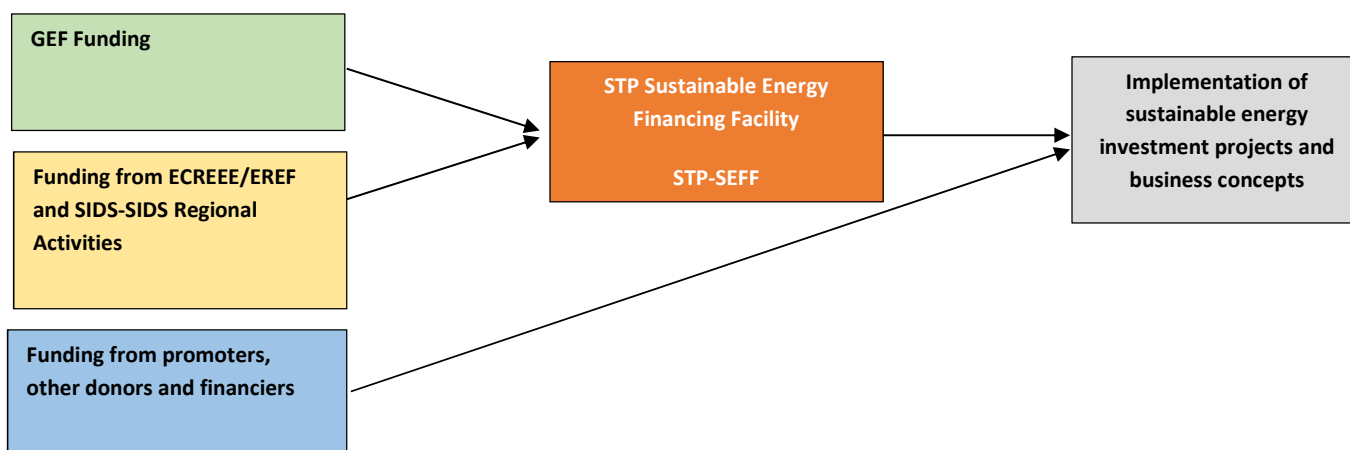


FIGURE 5: RELATIONSHIP OF THE DIFFERENT CO-FINANCING SOURCES FOR THE DEVELOPMENT AND IMPLEMENTATION OF PROJECTS UNDER PC2

The following table summarises the outputs and activities of PC2.

<i>Project Component 2 (PC2): Sustainable Energy Investment Promotion</i>	
<i>Outcome 2: Increased investments in sustainable energy infrastructure and businesses</i>	
PC2 is directed at creating and facilitating the implementation of a sound and enabling national investment framework for RE and EE solutions (sustainable energy infrastructure and businesses) with a strong replication and leverage effect.	
Output 2.1: <i>The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated</i>	
Planned and Envisioned Activities	Responsibility
<u>Activity 2.1.1. The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated</u>	Consultants ALER ECREEE
Output 2.2: <i>A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums</i>	
Planned and Envisioned Activities	Responsibility
<u>Activity 2.2.1 Development of the National Sustainable Energy Investment Plan (NSEIP)</u>	Consultant PMU
<u>Activity 2.2.2 Presentation of the NSEIP to potential investors and financiers in at least two (2) investment forums</u>	ALER PMU
Output 2.3: <i>Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects</i>	
Planned and Envisioned Activities	Responsibility
<u>Activity 2.3.1. Innovative RE and EE projects (small hydro, solar, wind and/or bioenergy) with a total installed capacity of at least 5 MW are developed to financial closure and their implementation is facilitated</u>	Consultants EDP and other project developers and investors PMU
<u>Activity 2.3.2. Monitoring and evaluation of investment projects</u>	Project Proponents PMU
<u>Activity 2.3.3. Preparation of case studies and dissemination</u>	PMU
Output 2.4: <i>Based on existing instruments, a Financing Facility is established and supports priority sustainable energy projects and business ideas</i>	

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 2.4.1. Creation of a Financing Facility for Sustainable Energy Projects and business ideas, and facilitation of calls for proposals under the facility</u>	ECREEE SIDS DOCK (promotion of calls) RE Consultants PMU

Project Component 3 (PC3): Qualification and certification framework for sustainable energy

Expected outcome 3: Enhanced domestic public and private sector capacities to plan, implement, operate and innovate sustainable energy products and services in island contexts

There is a general lack of capacity, knowledge and awareness on RE and EE at all levels. Moreover, there is a general lack of qualification, certification and accreditation standards for sustainable energy products and services. Only if the quality infrastructure and quality qualification is in place, sustainable energy markets can grow. To promote the adoption of RE and EE in the electricity sector of STP it is important that this situation improves. Nevertheless, at PPG stage, it was identified that there are already some activities being put in place that aim at understanding the capacity needs of different stakeholders in STP as well as activities to increase stakeholders' capacities in relation to the energy sector and RE in particular.

It is relevant to highlight that AGER carried out a Training Needs Assessment and developed a Training Plan proposal in the area of electricity¹⁹. The objective of this Training Plan is to organize and make visible the information regarding the formative need(s) of any organization that aims to provide knowledge and promote professional skills, with a view to improving quality service, contributing in a direct way to organizational success. The plan includes a list of training programmes that are needed:

- Training on the value chain of the electrical system (production, transportation, distribution and commercialization) and on the tariff study (this tariff study is the one being developed with support from the WB/EIB under the PSRP);
- Training on grid access (grid connection; grid protection, accessories);
- Training in the field of Energy Resources Management Plans (contingency plan, reduction of electrical losses, etc);
- Training in the field of equipment certification (standardization of technical and safety requirements, inspection procedures, etc.);
- Training in the field of Electrical Efficiency and Energy Management (energy management, electricity consumption, knowledge of efficient equipment);
- Training in the field of electrical quality service provision (standardization of minimum quality criteria for providing electricity service);
- Conflict Management
- English language
- Renewable Energy;
- Execution of LV and MV boxes
- Safety and technical knowledge in the field of MV and HV electric lines control
- Work in heights;
- Substation concepts.

At the time of writing of this document there was no proposal on who would conduct and support the implementation of this Training Plan.

Other activities that analyse the capacity needs of government organisations are:

- The restructured GEF/UNDP project "*Promotion of environmentally sustainable and climate-resilient grid-based hydroelectric electricity through an integrated approach in STP*" already includes some activities that aim at identifying

¹⁹ AGER, *Proposta de Formação para Departamento de Assuntos de Electricidade*, 3 of March 2008.

some training needs and on reinforcing the capacity of some of the governmental institutions in STP regarding their functions in the sector as well as to RE, namely:

- Identification of the DGRNE training needs for the development of its functions on the energy sector;
 - Reinforcement of MIRNA/DGRNE material and organizational capacity;
 - Preparation and implementation of a training plan for the technicians of the Energy Directorate of DGRNE, UGP Energia, EMAE, AGER, DGA, DF and DADA.
 - Reinforcement of the capacity in terms of the use of environmental evaluation methodologies for RE;
 - Design and implement the communication strategy and advocacy aimed at communities, decision-makers, the private sector, and other stakeholders;
- As a consequence of the analysis of the DGRNE training needs, the DGRNE is preparing its capacity building plan which is expected to be finished in 2018. The analysis carried out revealed so far that there are no entities in STP providing training services in the area of RE and EE.
 - EMAE has also an inventory of its capacity building needs that highlights, between other things, EMAE and the DGRNE need of training on the development, operation and maintenance of small-hydro systems.
 - The WB/EIB within the STP PSRP has a package of capacity building services, that includes capacity building in RE; mini-hydro and in the reinforcement of the management capacity that could be useful for EMAE.

The Centre for Renewable Energy and Industrial Maintenance (CERMI) of Cabo Verde is a Corporate Public Entity whose vision is to be a “centre of excellence” in the field of RE and industrial maintenance at national level, ECOWAS and the PALOP (“Países Africanos de Língua Oficial Portuguesa”, African countries with Portuguese as official language) in the fields of training and certification of equipment and professionals, business incubation and R&D (Research and Development) ²⁰. CERMI was inaugurated in March 2015, and officially created by the Cabo Verde Decree-Law n° 29/2014²¹. It was established with the aim of being an instrument for the operationalization of the country's energy policy, promoting and carrying out activities of public interest in the area of energy in general and in the area of demand management in particular and its interfaces with other sectoral policies, without losing its focus on the ECOWAS and PALOP markets²². Table 5 summarises CERMI main strategic business axes and its sub-domains.

TABLE 5: CERMI BUSINESS STRATEGY²³

Main strategic business axes	Strategic business sub-domains
(1) Intervention in the area of energy management and industrial maintenance	<p>1.1. Solar thermal systems: covers the operationalization of laws, technical regulations and standards, the certification of persons, companies and systems, the training of the technical community and knowledge dissemination;</p> <p>1.2. RE generation (decentralized generation and micro-generation): focuses on the operationalization of laws, regulations and technical regulations, certification of people, companies and systems, training of the technical community and dissemination of knowledge;</p> <p>1.3. Comfort in buildings: includes the development of normative devices in collaboration with the Cabo Verde Institute for Quality Management and Intellectual Property (IGQPI), Directorate of Energy Services in Cabo Verde and competent entities; operation of laws, technical norms and regulations; certification of people, systems and buildings; technical community training and knowledge dissemination;</p> <p>1.4. Efficiency of equipment: includes certification, inspection of partnerships, development of incentive mechanisms in partnership with competent entities, training of the technical community and dissemination of knowledge.</p> <p>1.5. Industrial maintenance: covers training and certification of persons, knowledge dissemination, development of the technical normative framework for safety, quality and extended useful life of</p>

²⁰ <http://www.governo.cv/index.php/rss/7484-governo-quer-que-cermi-seja-um-espaco-de-referencia-para-as-energias-renovaveis-fernando-elisio-freire>

²¹ Government of Cabo Verde, Decree-Law n.29/2014, <http://extwprlegs1.fao.org/docs/pdf/cvi134635.pdf>

²² Programa Estratégico do CERMI, E.P.E 2015-2020

²³ Programa Estratégico do CERMI, E.P.E 2015-2020

	industrial systems and equipment.
(2) The Scientific and technological domain for research and innovation	<p>2.1. Scientific and technological research for the development of prototypes: covers research, laboratory testing, provision of services to third parties and scientific education programs;</p> <p>2.2. Networking and management of scientific knowledge: includes the development, implementation and management of the scientific and technological platform, the development and management of the scientific and technological network, the promotion and participation in scientific and technological working groups, the organization of conferences, workshops, forums, fairs and exchanges, the publication of technical manuals and the publication and dissemination of articles, newsletters, magazines and scientific and technological works.</p>

Up to 2020, CERMI aims at being a centre recognised at both national and regional level with political, technical and financial sustainability that contributes to the overall sustainability of the environment and the quality of life, by promoting²⁴:

- Mitigation of GHG emissions and climate change.
- Development and dissemination of technologies of greater efficiency in the use of resources.
- The scientific community and attracting national and international strategic partners.
- Greater dynamics in the sectoral market by acting on energy demand.
- A better balance between demand and supply in the employment market.

CERMI provides training courses on RE and EE and is expected to expand its curriculum to start offering courses on RE and EE projects associated with water resource management systems as well as in entrepreneurship and Energy Service Companies (ESCOs). CERMI will undergo organizational learning and development to create readiness in its management system, infrastructures and human, material and financial resources. CERMI offers facilities for education, applied research and experimentation, seven training workshops, catering space and a resource centre (capacity: 300 trainees, 4 100 m²). The Centre integrates different production technology and RE storage: (i) on-grid PV of 117 kWp (ii) off-grid PV of 32 kWp connected to batteries, and (iii) two wind turbines (rated power of 6 kW and 1 kW). The Centre is also equipped with a climate control system based on an absorption chiller (system that allows cold production from the heat produced by solar collectors) and a domestic solar hot water system. CERMI's building itself was built as a model of respect for the environment, EE, and cost efficiency in its construction and maintenance, taking into consideration the materials and equipment lifecycle and contributing to the reduction of global warming.

The following are some of the contents of CERMI curriculum on RE and EE:

- Installation and maintenance of small PV systems for electricity production: includes several modules from basic technical English to electric machines, basic principles of electricity and magnetism, project management, among other. Specifically related to RE and EE, it includes the following learning modules:
 - Energy and the environment (30 hours);
 - Energy management and EE (30 hours)
 - PV systems II (30 hours)
 - Dimensioning of PV systems (30 hours)
 - Implementation of solar PV (hands-on module) (100 hours)
 - Maintenance of PV systems (80) hours.
- Installation and Maintenance of Air Conditioning and Refrigeration Installations/systems: similarly to the PV installation courses, this one also includes modules of basic knowledge (technical English, physic-chemistry, oral and written communication in Portuguese, applied math), technological subjects covering planning of preventive maintenance in air conditioning and refrigeration installations; assembly of mechanic components; assembly of electrical and measurement/control components; installation and maintenance of equipment.

Moreover, Lux-Dev has just started a regional program “*Anchorage of CERMI to ECOWAS*” in which support is being provided to CERMI to train trainers on RE and EE. Under this programme, the trainers from the region and from the PALOPs come to CERMI (in Praia) to receive training.

²⁴ Programa Estratégico do CERMI, E.P.E 2015-2020

Also there are some ECOWAS regional programmes managed by ECREEE, such as the “*ECOWAS Renewable Energy Entrepreneurship Support Facility*” that aims to provide support to entrepreneurs working in the RE sector by training them and offering technical support in order to refine their projects and enable their RE business to prosper; and the “*ECOWAS Programme on Gender Mainstreaming in Energy Access*” that aims to factor in the different needs of men and women in the planning and execution of clean-energy related interventions in the region to ensure a universal access to energy services, from which STP can benefit from through the SIDS-SIDS cooperation.

The Research Centre for Energy, Environment and Technology (CIEMAT “*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas*”) from Spain has been actively involved in awareness raising and capacity building on sustainable energy solutions for Islands under the SIDS DOCK umbrella. CIEMAT will cooperate with the GEF/UNIDO project in the development of online modules for the training course on sustainable energy solutions for islands (Output 3.3).

In important areas (e.g. small hydro, solar-thermal, EE in appliances), the GEF project will facilitate also study tours and cooperation on international level. For example, STP experts will be invited to participate in workshops organized by AEE-Intec in conjunction with the Solar Heating and Cooling Program of the International Energy Agency and the International Sustainable Energy Conference (ISEC) on Heating and Cooling. An associated membership with the programme might be facilitated. Some of the research/knowledge tasks and the experiences of participating countries are highly relevant for STP. Study tours to countries with extensive experience in small hydro power development will be undertaken.

One of ALER’s objective is promote, among other things, the establishment of RE associations and its operationalization in the PALOPs; RE and EE awareness and information dissemination; as well as organization and coordination of investment workshops/forums and training workshops/programmes. ALER will cooperate with this GEF/UNIDO project for the capacity building component in:

- building the capacity of the recently created National RE Associations (Output 3.4); as well as
- bringing STP national experts to participate on the “Guinea-Bissau Sustainable Energy Forum and Technology Expo” and on the “Regional Mini-Grid Training for Policy-Makers of African Lusophone Countries” that will take place in Guinea-Bissau towards the end of 2018.

PC3 aims at mitigating the existing capacity constraints in the RE and EE sector of STP. The activities that are here proposed are directed to:

- i. Understand the capacity needs of the different key market players/enablers (e.g. policy makers on federal and municipality level, utility, regulator, consultants, project developers, businesses and industry, banks, civil society) on different aspects of RE and EE and on developing and facilitating the implementation of a National Qualification, Certification and Accreditation Framework to strengthen their capacities on the referred subjects (Output 3.1); and
- ii. Implement within the National Qualification, Certification and Accreditation Framework:
 - a special capacity building programme for MIRNA/DGRNE, EMAE, AGER and other authorities (Output 3.2);
 - a special on-line training programme on sustainable energy solutions for islands (Output 3.3);
 - capacity building course for the recently created National RE Associations (Output 3.4);
 - a train-the-trainers programme (that will be implemented through and at CERMI – see Output 3.5),
 - training and awareness raising sessions for national stakeholders (Output 3.6).

This will all be carried out through the establishment of synergies and in cooperation with on-going initiatives (GEF/UNDP project “*Promotion of environmentally sustainable and climate-resilient grid-based hydroelectric electricity through an integrated approach in STP*”, ECREEE regional initiatives and programmes, WB, ALER) as well as SIDS-SIDS knowledge transfer and South-South cooperation activities amongst the PALOPs. During the PPG phase this component was highlighted as high priority by most of the stakeholders.

As a result of this GEF/UNIDO project implementation:

- CERMI will be able to contribute to the achievement of its 2020 objectives and targets, as it will extend its network of trainers able to provide training courses in STP and the PALOPs and in this way achieve one of its main goals which is to train trainers and expand its services to other PALOPs.
- ALER will be able to support the operationalization of the recently created National RE Associations, similarly to what it has been doing in Mozambique, achieving in this way one of its own goals.

Output 3.1. Improved qualification, certification and accreditation framework on sustainable energy

Activity 3.1.1 Capacity and training needs assessment

During the PPG stage, it was identified that there are no programmes in place about or related to RE or EE and that there are no STP organisations or institutions that offer training on these subjects. Also, it was clear that at PPG stage several activities are being defined that include capacity building actions targeting some energy sector stakeholders. Furthermore, different stakeholders show different capacity building, knowledge and awareness needs.

As there is a lot being defined in STP at the moment, at the beginning of the implementation of this GEF/UNIDO project, a detailed capacity and training needs assessment for different stakeholders' groups will be carried out. The groups to be targeted are:

- MIRNA/ DGRNE and PMU
- Other governmental institutions operating in the energy sector: EMAE and AGER
- Other local institutions and market players
- Market enablers

Some of these organizations are carrying out or have carried out capacity needs assessment and have already a Training Plan that they would like to implement. For these organisations, the already carried out assessments, the Training Plans put together, and the initiatives that will support the implementation of the identified Training Programmes or parts of them, will be summarised and used to put together a National Qualification, Certification and Accreditation Framework on Sustainable Energy (Activity 3.1.2).

For the other stakeholders' groups, the Capacity and Training Needs assessment and the corresponding actions under the National Qualification, Certification and Accreditation Framework on Sustainable Energy will need to be developed under this GEF/UNIDO project, more specifically, as part of this activity. The results will be summarised in a Capacity and Training Needs report, which will enable the development of the National Qualification, Certification and Accreditation Framework on Sustainable Energy (see activity 3.1.2).

This activity will be carried out by Consultants and PMU.

Table 6 summarises a first assessment of capacity needs undertaken during the PPG stage.

TABLE 6: CAPACITY REQUIREMENTS OF VARIOUS STAKEHOLDERS GROUPS

Stakeholder group	Capacity needs
Policy makers in the RE and EE sectors and the energy sector in general.	<ul style="list-style-type: none"> • Developing and operationalizing coherent, comprehensive and evidence-based policies, laws and regulations that create a level playing field for RE and EE technologies • Implementing energy planning • Negotiating Power Purchase Agreements (PPAs) with independent power producers (IPPs) and setting viable feed-in tariffs (FiTs) • Mainstreaming climate resilience and gender
Policy makers from non-energy sectors like agriculture, health, water, private sector, transport sectors etc.	<ul style="list-style-type: none"> • Basic design of RE systems • Integrating RE components into other sectors (e.g. health, rural development, agricultural processing)
Entrepreneurs, project developers, equipment manufacturers, consultants and industry support bodies	<ul style="list-style-type: none"> • Basic concepts of electricity generation • Development of vocational and higher education courses adapted to RE and EE requirements and languages of the region • Vocational training on sustainable energy solutions for islands • Certification for conducting energy audits • Identifying, developing and packaging a pipeline of potential RE and EE investment projects • Negotiating viable PPAs with investors • Preparing quality business plans that are consistent with existing financing mechanisms • Identifying and developing potential Clean Development Mechanism (CDM) projects • Mobilizing and structuring investments in RE and EE projects • Mainstreaming climate resilience of energy infrastructure and gender

	<ul style="list-style-type: none"> • Special training on the operation, management and maintenance of on-grid/off-grid RE systems with a special focus on hydropower plants • Enforce, monitor, and verify standards on efficient electric appliances
Utilities	<ul style="list-style-type: none"> • Ability to tender RE and EE projects • Negotiate PPAs • Grid stability and the integration of RE • Integration of EE in the production and transmission of energy • Special training on the operation, management and maintenance of hydropower plants
Recipients/buyers of energy services and technologies	<ul style="list-style-type: none"> • Willingness and ability to pay for the services or technologies • Ability to assess the energy implication or cost in daily choices and decisions such as selecting electric equipment

Activity 3.1.2 Development and facilitation of the implementation of a Qualification, Certification and Accreditation Framework on Sustainable Energy

Based on the results of the Capacity and Training Needs assessment (Activity 3.1.1) a National Qualification, Certification and Accreditation Framework on Sustainable Energy will be developed taking advantages from and in cooperation with on-going initiatives in the country as well as in other SIDS, CERMI's mandate and on-going programmes. This will include a detailed implementation work plan and methodology, schedule, role/objectives/milestones, responsibilities and inherent cost. This will be carried out by an Expert and the PMU with support from CERMI, ECREEE and CIEMAT.

The following table highlights the possible components of the National Qualification, Certification and Accreditation Framework on Sustainable Energy.

TABLE 7: POSSIBLE COMPONENTS OF THE NATIONAL QUALIFICATION, CERTIFICATION AND ACCREDITATION FRAMEWORK ON SUSTAINABLE ENERGY

Training Programme / Modules of the Programme		Contents of training programme/ module of the programme	Target Groups
(1) Energy Expert Training (~0,5 week)		<ul style="list-style-type: none"> • Sustainable Energy Projects: importance of the consideration of sustainable energy projects / opportunities and risks (including gender mainstreaming) • Providing technical assistance to enterprises and coaching on RE and EE measures implementation in the electricity sector (incl. women entrepreneurship); • Providing technical assistance on the identification of the aspects to be considered when integrating RE systems and EE measures in the electricity sector / opportunities and risks • Conducting training sessions for stakeholders interested in developing their own RE and EE projects • Definition of the financial mechanism to be implemented for sustainable energy initiatives • Mainstreaming climate change and gender in sustainable energy projects 	MIRNA/DGRNE, EMAE, AGER, STP Universities and training institutions
(2) RE Training (~2 Weeks)	Module 1: Training on Identification, Development and Management of RE projects	<ul style="list-style-type: none"> • Sustainable Energy Projects: importance of the consideration of sustainable energy projects / opportunities and risks • Identify what sort of projects each participant could develop at their sites • Identify, develop a project pipeline of potential sustainable energy investment projects • Identify the technical, environmental and social issues of the projects (incl. gender issues) 	Management and technical people involved in developing RE projects looking at developing a project, possibly with support from the GEF/UNIDO project

Training Programme / Modules of the Programme	Contents of training programme/ module of the programme	Target Groups
	<ul style="list-style-type: none"> • Carry out a life cycle cost analysis of the project • Use a software for RE potential analysis such as RETScreen, PVsyst and COMFAR²⁵; • Analyse the impact on the electricity production costs of using sustainable energy solutions when compared with fossil fuels • Special hydropower training course (management and maintenance of hydropower systems) • Special training on mini-grids • Solar-thermal installations in the hotel and hospitality sector for water heating 	
	<ul style="list-style-type: none"> • Understand all the issues related to the design and development of RE projects from assessing the site-specific resource available, sizing and designing a system, to either writing or commissioning someone to write a specification, planning and permitting and providing links to additional information resources. • Incorporate specific issues of RE development in tendering • Importance of contracting certified installers / oversee the project installation • Mainstreaming climate change and gender in RE projects 	<p>Technical persons responsible for developing RE projects. This is designed as a follow-on module from the Identification, Development and Management of RE Projects Training (Module 1)</p>
	<ul style="list-style-type: none"> • Analyse existent financing instruments, including the carbon finance, the financial mechanism established under this GEF/UNIDO project, and other financing available for RE systems • Analyse the financial viability and sustainability of these types of projects. • ESCOs as financial mechanism/model • Guidance in the development of a quality business plan that is consistent with existent financial mechanisms 	<p>Project developers and financial institutions that want to develop and/or provide financing for RE projects and who wish to better understand the issues, as well as technicians who want to expand their services to RE projects development and implementation.</p>
	<ul style="list-style-type: none"> • Guidance on operational and management issues of RE projects including monitoring and quality control • Guidance on maintenance activities for RE projects and its importance • Possible role of ESCOs 	<p>Project developers looking at developing a RE project who wish to better understand the issues, as well as technicians who want to expand their services to RE</p>
	<ul style="list-style-type: none"> • Distribution, stability, power grid quality concepts; • Effects of RE injection into the grid and how to minimise disruptions 	<p>DGRNE, EMAE, AGER and RE project developers</p>
(3) EE Training (~1 Week)	<ul style="list-style-type: none"> • Fundamentals of EE and the importance of the adoption of EE measures in the electricity sector: <ul style="list-style-type: none"> ○ EE terms and indicators ○ Load characterization and load management studies ○ Evaluation of the energy consumed per working area, per equipment and voltage level monitoring 	<p>DGRNE, EMAE, AGER, project developers and financial institutions that want to develop and/or provide financing for EE projects and who wish to</p>

²⁵RETScreen: <http://www.nrcan.gc.ca/energy/software-tools/7465>

PVsyst: <http://www.pvsyst.com/en/>

COMFAR: <https://www.unido.org/resources/publications/publications-type/comfar-software>

Training Programme / Modules of the Programme	Contents of training programme/ module of the programme	Target Groups
	<ul style="list-style-type: none"> ○ Load curve and load factor calculation ○ Calculation and control of maximum load and optimization procedures ○ Design, implementation and evaluation of energy savings and energy conservation programs ○ Elaboration of energy consumption standards for different types of electric equipment ○ Equipment's energy performance certificates ○ Measurement of electric variables (power, active and reactive energy, voltage, current and power factor) ● Energy audits: <ul style="list-style-type: none"> ○ Definitions and process ○ Energy performance analysis ○ Assessment of energy saving ● Economics of EE systems: <ul style="list-style-type: none"> ○ Investment criteria ○ Cash-flows ○ Simple payback, internal rate of return and paybacks ○ Life Cycle Costing (LCC) decision making method ● Financing options ● Role of ESCO in EE 	better understand the issues, as well as technicians who want to expand their services to EE related projects.
(4) Capacity Building Programme for MIRNA/DGRNE, EMAE, AGER and other authorities (~1,5 Weeks)	Specific training course that will be compiled using the information of the Training Programmes (2) and (3) but as a "lighter version". This training course aims at providing information on sustainable energy projects (importance, identification, important aspects to consider, stage of development).	MIRNA/DGRNE, EMAE, AGER and other authorities
(5) Special on-line Training Programme on Sustainable Energy Solutions for Islands (~2 days)	Specific training course that will be compiled using: (1) the information of the Training Programmes (2) and (3) but conceived as a lighter version with a special focus on its application on islands and (2) experiences and lessons learnt from the implementation of sustainable energy solutions in other GEF projects from Cabo Verde and Guinea-Bissau. This training course aims at providing information on sustainable energy solutions applicable in island contexts (importance, identification, important aspects to consider, stage of development).	STP, Cabo Verde, Guinea-Bissau stakeholders
(6) Capacity building training programme for the recently created National RE Associations	Specific training comprising: <ul style="list-style-type: none"> ● Management, operation and financial models; ● Enhancing the vision, strategy and priorities of the associations; ● Drafting of an action plan and budget definition ● Preparation of the image, communication and marketing materials ● Raising financing and members 	Association for RE Promotion and Association of the RE Enterprises

For each of the above-referred training programmes / training modules, if contents already exist and have been developed by on-going initiatives (CERMI, CIEMAT, etc) those will be analysed and improved. If they do not exist, the contents will be developed by a Consultant with guidance from the PMU.

Its implementation will be facilitated in close cooperation with national and international partners. The National Qualification, Certification and Accreditation Framework on Sustainable Energy will be implemented by different experts depending on the subjects of the identified needs.

The implementation of the National Qualification, Certification and Accreditation Framework on Sustainable Energy will be evaluated by training programmes/actions by the trainees and the PMU. At the end of each training programme/action the trainees

will be asked to evaluate the training action (its contents, its format, information delivered and means used, contribution of the training programme to the trainee's capabilities, etc.). The collected information will be analysed by the PMU, who will evaluate the implementation of each component as a whole. Every year the PMU will write a report on the progress and results yielded by the implementation of the National Qualification, Certification and Accreditation Framework on Sustainable Energy as a whole.

Output 3.2. Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas

Activity 3.1.2 Develop and facilitate the implementation of a special capacity building programme for MIRNA/DGRNE, EMAE, AGER and other authorities on integration and management of on-grid/off-grid RE systems and enforcement, monitoring, and verification of standards on efficient electric appliances

In line with the investment component, a special capacity building programme within the National Qualification, Certification and Accreditation Framework on Sustainable Energy (Training Programme 4 referred in Table 7) will be designed and put in place, to strengthen:

- the capacities of MIRNA/DGRNE, EMAE and AGER to integrate and manage on-grid/off-grid RE systems, which will include biomass, solar, wind and a special focus on mini-hydro.
- the capacities of other relevant national authorities (e.g. customs) to monitor, verify and enforce standards on efficient electric appliances, in line with the policy component (PC1). This includes also special attention to solar-thermal systems.

This will be implemented by different experts depending on the subjects of the identified needs.

As per the other training courses, under the National Qualification, Certification and Accreditation Framework on Sustainable Energy, the implementation of this special capacity building programme will be evaluated by training programme/action by the trainees and the PMU at the end of each programme/training action. The collected information will be analysed by the PMU, who will evaluate the implementation of each component as a whole. Every year the PMU will integrate the progress on the implementation of this special training programme in the report on the progress and results yielded by the implementation of the National Qualification, Certification and Accreditation Framework on Sustainable Energy as a whole.

Output 3.3. On-line training program on sustainable energy solutions for islands developed in Portuguese and applied by capacity building institutions and experts in São Tomé and Príncipe, Cabo Verde and Guinea-Bissau

Activity 3.3.1 Develop and implement a special on-line training programme in sustainable energy solutions

Within this activity, the National Qualification, Certification and Accreditation Framework on Sustainable Energy will include the development and implementation of an on-line special training programme on sustainable energy solutions for islands (Training Programme 5 referred in Table 7), that will:

- Devote special attention to RE and EE considerations and applications on islands;
- Include important elements of SIDS-SIDS cooperation between the Portuguese speaking countries STP, Cabo Verde and Guinea-Bissau.
- Serve as a basis for exchanging lessons learnt from other on-going GEF projects in STP, Cabo Verde and Guinea-Bissau.

This will be developed in Portuguese as an on-line training course that will enable the participation of several stakeholders from the Portuguese speaking islands, enabling in this way to address the scarcity of training resources in Portuguese. The training materials used for this course will then be compiled into a Best Practice Guide for the development of Sustainable Energy Solutions in Islands that will be available in both Portuguese and English. This on-line special training programme will then be used by capacity building institutions and experts in the three countries (i.e. STP, Guinea-Bissau and Cabo Verde) and the Best Practice Guide will be disseminated through the MIRNA/DGRNE Website and ECREEE website. It is expected that this online training programme will run at least twice during the GEF/UNIDO project implementation period.

The regional SIDS-SIDS activities will provide co-funding for this activity.

CIEMAT from Spain will develop the on-line modules of the training as well as the Best Practice Guide for the development of Sustainable Energy Solutions in Islands.

It is estimated that at least 75 stakeholders will participate in the online training programme. Women will be encouraged to participate.

Output 3.4. Capacity support is provided for the operationalization of the National RE Associations

Activity 3.4.1 Develop and implement a capacity building training programme to enhance the capacity of the National RE Associations

Recently two National RE Associations were created in STP: The **Association for RE Promotion** (*Associação de Promoção das Energias Renováveis*) and the **Association of RE Enterprises** (*Associação das Empresas de Energias Renováveis*). Such associations are very important to gather and coordinate efforts from all interested stakeholders and relevant actors, to promote information sharing at national and international level, to foster agreements, defend private sector interests and be a common voice and interpreter between the public and private sectors.

ALER plays the same role at regional level and has identified the relevance of creating local capacity so this responsibility can be taken by national stakeholders to make information available about the RE sector and involved parties. In addition, one of ALER's objectives is to promote the creation of RE associations in the PALOP.

Given ALER's experience as RE association and its contacts in STP and other PALOP, ALER will establish and implement a capacity building training programme (Training Programme 6 referred in Table 7) for the recently created two National RE Associations to support the development/implementation of their functions and its operationalization. On-going support will also be provided by ALER to the associations during a year after the capacity building programme implementation.

Output 3.5. At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on renewable energy and energy efficiency issues

Activity 3.5.1. Train-the-trainers on the modules developed in Output 3.1

The objective of this activity is to carry out Train-the-Trainers programmes for STP stakeholders at CERMI in Cabo Verde, taking advantage of CERMI's state of the art infrastructure, as well as experience on the subjects of these training programmes. This activity aims at mitigating the barriers associated with the limited technical knowledge on the installation, operation and maintenance of RE systems in STP as well as on the consideration and incorporation of EE measures, therefore contributing to creating a critical mass of trainers that can deliver the established programmes in STP, ECOWAS and the PALOP. It is envisaged under the Train-the-Trainers programme that fifteen (15) certified trainers from five (5) capacity building institutions and from Government organisms (MIRNA/DGRNE, EMAE, AGER) will be trained. The trainings will seek at least 40% female participation as trainees, facilitators and organizers.

The following sub-activities will be implemented:

3.5.1.1. Design and definition of the Train-the-Trainers Programme

The Train-the-Trainers programme will be designed having in mind the results of the capacity needs inventory conducted in Output 3.1 and the contents to be taught. The detailed work plan for each of the modules will be compiled and will clearly highlight the schedule, objectives, roles and responsibilities, milestones, target audience etc. This will be carried out by Consultants with support from the PMU and CERMI.

3.5.1.2. Execution of the Train-the-Trainers Programme

A group of approximately 15 professionals will be trained through classroom lessons, on-the-job and mentoring activities conducted by CERMI Staff and Consultants. They will be equipped with the expertise and the tools required for providing the following services:

- Providing technical assistance to enterprises and coaching on RE and EE project implementation.
- Conducting Training Programmes for stakeholders interested in developing RE/EE projects.

It is expected that the 15 people will come from MIRNA/DGRNE, EMAE, AGER, STP Universities and training institutions. Some of the trained professionals will subsequently assume roles as RE and EE Consultants for RE and EE projects and become a source of expertise and services for the GEF/UNIDO project as well as for the electricity sector in STP. Women will be encouraged to participate as trainees, facilitators and organizers.

The Train-the-Trainers programme will follow the following steps:

Step 1: Preparation of the training programme

This involves the preparation of the training material and contents of the lessons, the selection of trainees, the identification of 1-2 demonstration projects from GEF/UNIDO projects implemented and in operation in Cabo Verde for the practical training, securing approval for site visits, classroom logistics, etc.

Step 2: First training period

CERMI Staff and Consultants will provide training to STP trainees in classrooms and at investment projects locations for on-the-job training where the GEF/UNIDO projects are implemented and in operation in Cabo Verde. The training will cover the subjects to be taught in the Training Programmes to be implemented under the National Qualification, Certification and Accreditation Framework on Sustainable Energy (Table 7).

The training will be provided both directly to the future experts and also with the future experts as participants in the training sessions that they will teach later on their own. So, for each of the courses, CERMI Staff and the Expert(s) will train National STP RE and EE Consultants on the use of the training curriculum. This curriculum will be introduced to the national experts in three stages: observing CERMI Staff/Consultants teaching / delivering the first training; co-teaching / delivering the second training with the CERMI Staff/Consultants; and delivering the third training with CERMI Staff/Consultants observing and providing feedback on teaching / delivering techniques. Any future workshops will be delivered by the National Consultants alone.

Step 3: Second training period: trainees apply knowledge, skills and tools provided

Trainees apply the knowledge, skills and tools that have been provided to identify potential projects and to start on the design and development of the projects. During this period, trainees will have access to the Consultants’ “remote” coaching and technical advice.

Step 4: Third training period

Consultants provide advanced training to national trainees in classrooms and at demonstration project sites either in Cabo Verde or STP. They review and discuss the projects development and the status that the participants have reached. They observe and provide feedback to trainees in the application of skills in project development.

3.5.1.3. Evaluation of the Train-the-Trainers Programme

This activity aims at evaluating the training component of the Train the Trainers course and the other technical modules offered. This evaluation will be carried out by the National Consultants, Trainees and the PMU.

Output 3.6. Improved capacities of key stakeholders through national and sub-regional trainings, by train-the-trainer approaches and training missions

Activity 3.6.1. Train 100 national stakeholders on sustainable energy issues

This activity will train at least one hundred (100) energy key STP stakeholders on sustainable energy issues and projects. This will have a particular focus on:

- planning, implementation, operation, maintenance and monitoring of RE on-grid and off-grid projects and/or EE projects; and
- hydropower and hydrological measurements.

Target groups may include individual stakeholders as well as local RE/EE energy companies or businesses that wish to receive training on sustainable energy issues to improve their capabilities.

This will be done in cooperation with ECREEE regional training activities as well as regional workshops promoted by ALER (such as the “Guinea-Bissau Sustainable Energy Forum and Technology Expo” as well as the “Regional Mini-Grid Training for Policy-Makers of African Lusophone Countries”) and by national trained trainers of Output 3.5.

The trainings will seek to integrate at least 40% female participation as trainees, facilitators and organizers.

The following table summarises the outputs and activities of PC3.

Project Component 3 (PC3): Qualification and certification framework for sustainable energy

Outcome 3: Enhanced domestic public and private sector capacities to plan, implement, operate and innovate sustainable energy products and services in island contexts

PC3 is directed at mitigating the existing capacity constraints in the RE and EE sector of STP.

Output 3.1: Improved qualification, certification and accreditation framework on sustainable energy

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
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<u>Activity 3.1.1. Capacity and training needs assessment</u>	Consultants PMU
<u>Activity 3.1.2 Development and facilitation of the implementation of a Qualification, Certification and Accreditation Framework on Sustainable Energy</u>	Consultant PMU CERMI, ECREEE and CIEMAT
<i>Output 3.2: Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 3.2.1 Development and facilitate the implementation of a special capacity building programme for MIRNA/DGRNE, EMAE, AGER and other authorities on integration and management of on-grid/off-grid RE systems and enforcement, monitoring, and verification of standards on efficient electric appliances</u>	Consultants PMU
<i>Output 3.3: On-line training program on sustainable energy solutions for islands is developed in Portuguese and applied by capacity building institutions and experts in São Tomé and Príncipe, Cabo Verde and Guinea Bissau</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 3.3.1. Develop and implement a special on-line training programme in sustainable energy solutions</u>	CIEMAT
<i>Output 3.4: Capacity support is provided for the operationalization of the National RE Associations</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 3.4.1 Develop and implement a capacity building training programme to enhance the capacity of the National RE Associations</u>	ALER
<i>Output 3.5: At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on renewable energy and energy efficiency issues</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 3.5.1. Train trainers on the modules developed in Output 3.1</u>	CERMI Staff AEE-Intec in conjunction with the IEA Heating and Cooling Programme with focus on solar thermal technologies Consultants
<i>Output 3.6: Improved capacities of key stakeholders through national and sub-regional trainings, by train-the trainer approaches and training missions</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 3.6.1. Train 100 national stakeholders on sustainable energy issues</u>	Certified local trainers ECEEE ALER

Project Component 4 (PC4): Project monitoring and evaluation

Expected Outcome 4: Continuous monitoring and evaluation (M&E) of the implementation of the GEF project conducted in accordance with established GEF and UNIDO procedures and guidelines

The overall objective of PC4 is to ensure continuous monitoring and evaluation (M&E) of the implementation of the GEF project conducted in accordance with established GEF and UNIDO procedures and guidelines. This will allow not only the monitoring of the project's progress but also the design of an overall project impact assessment on a rolling periodic basis, built-up from achievements under the project's different components. The monitoring and evaluation of the project activities combined with the assessment of the project results impact will provide a frame for periodic reviews of the project's 'Theory of Change' and the update of subsequent implementation strategies and work plans.

This will be achieved through:

- Establishment of Project Management Unit (PMU), the National Project Coordinator (NPC) and Project Steering Committee (PSC)
- Establishment and implementation of an adequate and systematic monitoring, evaluation (M&E) and reporting system of all project indicators following UNIDO and GEF procedures to ensure successful project implementation;
- Timely and continuous dissemination of project activities and results through the project's Website.

The following are the two main outputs of PC4:

Output 4.1. Mid-term review and terminal evaluation executed

Activity 4.1.1 Mid-term review

The NPC will prepare the ToRs for the recruitment of an Independent Evaluator that will perform the mid-term review of the project according to UNIDO and GEF guidance. Achievements made up to this stage should be identified and compared against baseline and targets, impacts and sustainability of results assessed as well as possible risks until the finalisation of the project identified. This evaluation should be carried at the middle of the project (month 24).

Since this project falls under GEF CCM-1 Program 1 “Promote the timely development, demonstration, and financing of low-carbon technologies and mitigation options”, achieved greenhouse gas emissions reductions should be evaluated too. This should be done following the guidelines on the Updated Results Architecture for GEF-7 where Core indicators and sub-indicators are to be tracked and results captured in Core indicators Worksheets.

Activity 4.1.2. Terminal evaluation

The NPC will prepare the ToRs for the recruitment of an Independent Evaluator that will perform the terminal (final) evaluation of the project. Achievements made up to this stage should be identified and compared against baseline and targets, impacts and sustainability of results assessed in order to evaluate the overall project performance during its implementation period. This evaluation should be carried out three months prior to the end of the project.

Since this project falls under GEF CCM-1 Program 1 “Promote the timely development, demonstration, and financing of low-carbon technologies and mitigation options”, achieved greenhouse gas emissions reductions should be evaluated as well. This should be done following the guidelines on the Updated Results Architecture for GEF-7 where Core indicators and sub-indicators are to be tracked and results captured in Core indicators Worksheets.

Output 4.2. Project's progress monitored, documented and recommended actions formulated

Activity 4.2.1. M&E Framework design

The first activity is to develop a detailed work plan for the execution of the project (schedule, roles and responsibilities, milestones, etc.). This plan should consist of all the necessary items to be applied during project execution and should be designed following GEF and UNIDO procedures. The plan should have a logical framework that captures the identified indicators per outcome and/or output as well as indicators to measure how the GEF project contributes to STP attainment of the SDGs: SDG-7 (universal sustainable energy access), SDG-9 (sustainable and inclusive industrialization focusing on the transformation sector), and SDG-13 (climate action).

An **indicator** is a quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of an activity. A “starting point” (e.g. value) for each indicator should be selected in order to allow for later comparison against achievements during evaluation stages.

A proper M&E framework should consist of the following:

- **Monitoring process:** it refers to the continuous process of collecting data on the agreed indicators to provide information on the extent of progress and achievements made. It involves the systemic collection of information and data as well as calculating specific indicators to evaluate the effectiveness of the activities implemented. The monitoring should be conducted following specific procedures to collect and manage information, data, and variables. Procedures that are already in place in the country to track variables should be taken into consideration and synergies with other on-going initiatives should be taken into consideration (for example, the SEforAll initiative).
- **Evaluation process:** it refers to the action of assessing the achievements in comparison to the original baseline scenario (at any given moment during implementation) and to the expected targets. This will help the evaluator to understand if the objectives set for each indicator were met or not. This comparison enables the country to identify delays or deviations and to take corrective actions accordingly (e.g. modify targets or implementation strategies). Proper monitoring is vital for

conducting a successful evaluation, which will aid to keep the initiative on track. A proper evaluation frequency should be selected in accordance with the type of activity under execution and the targets. Typical evaluation frequency is once a year.

- Reporting process: refers to the systematic and timely provision of essential and useful information showing how STP is progressing toward the achievement of the project’s goals. It should take place at periodic intervals and should result in the publication of a simple report indicating for the corresponding monitoring period which were the expected objectives and what was achieved, as well as any problems faced during monitoring in order to take the necessary corrective actions.

A Consultant will be hired to design the M&E framework and to provide the necessary capacity building course to the NPC and those involved in the implementation of the M&E framework.

Activity 4.2.2. M&E Framework implementation

The M&E will be applied as described in its design. Roles and responsibilities of the different actors involved in the application of the M&E Framework should be defined. The M&E plan will be reviewed and updated periodically basing on the results that are being achieved throughout project implementation. The NPC will be responsible for the day-to-day management, monitoring and evaluation of project activities as in the agreed M&E plan. The NPC will coordinate all project activities being carried out by project Consultants and partners.

The following table summarises the outputs and activities of PC4.

Project Component 4 (PC4): Project monitoring and evaluation

Outcome 4: Continuous monitoring and evaluation (M&E) of the implementation of the GEF project conducted in accordance with established GEF and UNIDO procedures and guidelines

Project progress towards objectives continuously monitored and evaluated.

Output 4.1: Mid-term review and terminal evaluation executed

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 4.1.1. Mid-term review</u>	International Independent Evaluator
<u>Activity 4.1.2. Terminal evaluation</u>	International Independent Evaluator.

Output 4.2: Project’s progress monitored, documented and recommended actions formulated

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
<u>Activity 4.2.1. M&E Framework design</u>	Consultant
<u>Activity 4.2.2. M&E Framework Implemented</u>	NPC

A.1.4. Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, CBIT and co-financing;

STP geographic situation as SIDS implies facing specific challenges that other continental countries may not be subject to, such as for example being exposed to climate change-related natural disasters. This involves considering and implementing tailored adaptation and mitigation measures. Particularly regarding electricity services, grid infrastructure is sometimes at risk due to climatic phenomena, especially on the coastal areas.

In addition, although STP had invested in hydropower plants in the past and, back then, RE from hydro had significant participation in the electricity mix, a period of stagnation came during which little investment in maintenance and new infrastructure took place, made grid infrastructure deteriorate, and reduced energy generation capacity leading to the inclusion of -more expensive- fossil-fuel based generation. This implied reducing the RE share on the grid mix. Furthermore, due to the frequent power cuts, many have chosen to install their own generators (most diesel-based but there are some isolated solar PV systems also). In addition, due to its geography (a succession of valleys and mountains) it is difficult in STP to design new grid extensions due to the prohibitive costs that would imply.

The previously described scenario is a major concern for the Government of STP, who has committed to improving the living conditions of its population and concentrate efforts on increasing its socio-economic development in a sustainable manner, which would include, for example, reducing its dependence on imported fossil fuels for energy generation. Part of this could be solved if STP would harness its indigenous renewable resources for both on-grid and off-grid power generation.

In order to facilitate and accelerate the market-based integration of RE and EE, the proposed GEF/UNIDO project will take a systematic approach combining technical and investment assistance to integrate RE and EE for electricity generation in the energy sector of STP and to overcome current barriers through the coverage of the following incremental costs: for PC1, GEF financing will support the integration of sustainable energy solutions (RE and EE) in relevant national policies and regulations and will create a package of incentives to promote the adoption of RE-based generation. In addition, EE standards will be developed to avoid unnecessary waste of energy due to the use of inefficient appliances and consequently reduce peak loads. RE and EE investment projects will be supported to financial closure/implementation stage through PC2 to demonstrate its feasibility and application in the country. These objectives are coupled with an intensive capacity building activity that will be implemented through PC3 (part of which will take place in Praia, Cabo Verde, by CERMI thus fostering SIDS-SIDS Cooperation) to ensure that, after GEF project is finished, the results are sustainable and continue to bring benefits throughout time. Furthermore, the GEF financing will also promote women empowerment by assessing how to better integrate gender dimensions in the implementation of RE/EE initiatives and policy creation producing a positive direct impact in women’s lives.

Presently, knowledge on the actual RE potential is limited and most of the studies that exist are focused on the hydropower resources. There is insufficient information about the rest of the renewable resources’ potential on the islands (although some studies on wind resource potential and use are being carried out by EDP on Principe Island), which is crucial to identify and propose any new RE project. Therefore, through PC2, the GEF funds will be used for the creation of a GIS-based National RE Resource Mapping and a National Sustainable Energy Investment Plan, which will include potential project ideas. In addition, to make information available on the energy sector and on RE and EE, PC1 will develop an Energy Sector Database. All these instruments will be used to raise awareness and interest among investors and financiers and ultimately encourage them to invest in STP. In this way, GEF would be, with a relatively small contribution, leveraging funds from other sources and facilitating the implementation of RE projects for energy generation.

The project will be co-financed by the Government of STP through MIRNA and the Ministry of Finance, Commerce and Blue Economy (through the WB and the EIB). Besides, it is envisaged that private operators and financial institutions will also contribute financially to implement investment projects. In the absence of this project, the national market-based adoption of sustainable energy solutions will not occur at the pace needed to improve the current energy scenario. Moreover, there is a risk of creating insufficient policies and disconnected approaches due to limited knowledge, competencies and cooperation on RE/EE issues.

A.1.5. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The project approach is deemed to be most cost-effective to ensure sustainable results. The combination of funding from the GEF and support from the Government and the private sector will leverage substantial investment in “green and clean” technologies not only during the project’s period of implementation but also after the completion of the project as an indirect result by having created a wider portfolio of opportunities for sustainable energy solutions and an investment mechanism and strategy.

As per the GEF, the global environmental benefits in the Climate Change Mitigation focal area are the sustainable mitigation of the concentration of anthropogenic GHG emissions in the atmosphere. The project intervention will contribute to climate change mitigation since GHG would be reduced due to the replacement of diesel-fuelled systems with RE systems. GHG emissions in the form of CO₂ (carbon dioxide) from diesel combustion will be avoided or reduced thanks to the inclusion of RE-based generation from RE resources available in the country and the implementation of EE initiatives. The GHG emissions reduction calculation is based on the assumption that the GEF project will (partially) contribute to the achievement of the NDC targets by mitigating the barriers for the adoption of sustainable energy solutions. The detailed GHG emission reduction calculations and assumptions are available in Annex L.

GHG Emissions Reduction Estimate as Global Environmental Benefit

The implementation of this project will generate direct and indirect GHG emissions reductions and avoidance. The estimate of emissions reductions was done following the *Manual for Calculating GHG Benefits of GEF Projects: EE and RE Projects (April, 2008)* as well as the *CO₂ Spreadsheet* provided by GEF. Moreover, the *2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for Greenhouse Gas Inventories* was used as reference.

Direct Emissions Reductions:

The direct GHG emissions reductions are on a case by case scenario listed in Table 8.

TABLE 8: DIRECT GHG EMISSION REDUCTIONS

ID	Project Name	Direct GHG emissions Reductions (tCO ₂ e/year)	Project lifetime (years)	Total reduction over lifetime (tCO ₂)*
1	Agostinho Neto SHPP	1,173	20	23,450

2	Contador MHPP Capacity extension	7,972	20	159,432
3	GueGue Small Hydropower Plant	985	20	19,696
4	Diogo Vaz MHPP	103	20	2,065
5	Monte Café MHPP	46	20	918
6a	Papagaio River (1 MW)	2,339	20	46,774
6b	Papagaio River (814 kW)	1,758	20	35,157
7	Solar PV-diesel hybrid plant at Airport	1,070	20	21,400
8	Replacement of old light bulbs by more efficient ones	86	20	1,712
9	Consumption cut on Air Conditioning equipment and others	100	20	1,995
TOTAL:		15,630	20	312,598

This translates to a unit abatement cost (UAC) of about 1.99 GEFUS\$/ton CO₂ (i.e., GEF\$ per ton CO₂). This UAC figure is estimated based on the potential emissions reductions of all the projects (see Table 4 below shows the key features of the selected RE and EE priority projects. Note that due to rounding calculation results, the total result of the emissions reductions may be different from adding up the figures show in the table.

TABLE 4) throughout their entire lifetime (20 years). It will be regularly re-evaluated based on new CO₂ emission reduction estimates as project progresses.

It is worth mentioning that additional GHG emissions reductions will be achieved after the STP Sustainable Energy Financial Facility is operative and further projects start to be implemented under PC2. The expected reductions from these are difficult to calculate on an *ex-ante* basis since data and information on potential projects to be undertaken is not sufficient at this stage. Table 9 shows the estimated projects indirect emissions reductions

TABLE 9: INDIRECT EMISSIONS REDUCTIONS

ID	Project Name	Indirect bottom-up GHG emissions avoided (tCO ₂ e equivalent)	Comments
1	Agostinho Neto SHPP	117,250	Replication factor: 5 Project can be easily replicated in STP - there is a list of potential 34 hydropower developments.
2	Contador MHPP Capacity extension	797,160	Replication factor: 5 Project can be easily replicated in STP - there is a list of potential 34 hydropower developments.
3	GueGue Small Hydropower Plant	98,478	Replication factor: 5 Project can be easily replicated in STP - there is a list of potential 34 hydropower developments.
4	Diogo Vaz MHPP	10,325	Replication factor: 5 Project can be easily replicated in STP - there is a list of potential 34 hydropower developments.
5	Monte Café MHPP	4,589	Replication factor: 5 Project can be easily replicated in STP - there is a list of potential 34 hydropower developments.
6a	Papagaio River (1 MW)	233,872	Replication factor: 5 Project can be easily replicated in STP - there is a list of potential 34 hydropower developments.
6b	Papagaio River (814 kW)	175,786	Replication factor: 5 Project can be easily replicated in STP - there is a list of potential 34 hydropower developments.

7	Solar PV-diesel hybrid plant at Airport	42,800	Replication factor: 2 This project can be replicated in STP subject to land availability for a similar size
8	Replacement of old light bulbs by more efficient ones	17,116	Replication factor: 10 Project can be easily replicated not only in Principe Island but also on São Tomé Island.
9	Consumption cut on Air Conditioning equipment and others	19,948	Replication factor: 10 Project can be easily replicated not only in Principe Island but also on São Tomé Island where there are much more public buildings.
TOTAL:		1,517,324	-

For each of the selected priority investment projects the baseline, alternative scenario, GHG direct and indirect emissions are calculated and specified in Annex L.

A.1.6. Innovation, sustainability and potential for scaling up

The GEF/UNIDO project is fully in line with the mandate of UNIDO to promote inclusive and sustainable industrial development and SDG-9 on industry, innovation and infrastructure. It also proves its innovativeness, sustainability and potential for scaling up through its strategic project components.

Innovativeness:

The project innovativeness lays on two main facts:

- 1) on the capacity building strategy/programme that will be implemented to fulfil the knowledge gap in STP; and
- 2) on technology solutions proposed.

Firstly, the training programme proposed for STP has a special focus on improving capacities in **sustainable energy island solutions**. Although the training will provide the basics on RE and EE, it will additionally provide information, training and conduct activities in energy-related topics attaining SIDS. In this way, STP will receive specialized knowledge in specific topics which differ from the energy challenges commonly faced by larger continental countries. Apart from that, SIDS are very vulnerable to climate change effects and therefore energy-related solutions also need to take into consideration the adaptation needs of the islands, which is one of the reasons why tailored training is required.

Moreover, the proposed GEF/UNIDO project will be taking advantage of using Cabo Verde's CERMI experience, background and installations to improve the technical knowledge base of its professionals with an interest in RE and EE. This innovative approach will bring benefits to both countries and create a win-win situation because STP will be able to gather experiences, lessons learnt and training of excellence from CERMI and, on the other hand, taking STP stakeholders to CERMI helps the institution achieve its goal of being a centre recognised at both national, regional level and the PALOP for its contribution to the overall sustainability of the environment and the quality of life through its core activities (e.g. capacity building, training, dissemination of information, etc.).

Lastly, innovative solutions to increase the use of hydropower (either technological or training solutions) and other RE sources will be proposed. In spite of the fact that hydropower is a worldwide and cheap energy generation method, in STP little has been done to promote its use even having a vast and available water resource throughout the country. In fact, during the PPG Phase, it was found that STP is using hydropower to cover peak loads (demand) instead of using it for base load, which is being covered with (expensive) thermal generation.

In addition, productivity of agricultural activities, and potentially fishery and tourism also, will be benefited by the wider use of hydropower and other renewables. A particular focus on nexus solutions with high local value creation effects, a strong gender inclusion and women empowerment impact will be considered. Possibilities to use RE and EE as a tool to promote eco-tourism will be studied as well.

Sustainability:

While the project outputs were developed focusing on the duration of the project, all project components' impacts are expected to continue beyond project closure ensuring their sustainability.

For instance, in PC1 under Output 1.1, the project will: (i) establish a platform (the NSEP) for different stakeholder to continuously discuss issues related to sustainable energy and to ensure that synergies are created between the different stakeholders operating in the energy sector, in transversal sectors and with sustainable energy related on-going and future projects; (ii) establish a Website to raise awareness and make information available on sustainable energy initiatives and on STP energy sector; (iii) create an Energy

Sector Database that will centralise the energy sector information and will publicise it through the Website; and (iv) develop policies and plans that will be under implementation during the GEF/UNIDO project and after it. Outputs 1.2 and 1.3 will develop an incentive package of incentives for RE sound policy recommendations and standards for EE to be presented for formal adoption as national legislation. It is expected that once the project is completed, the established platform will keep promoting the continuous discussion on sustainable energy; the Energy Sector Database will continue to be used as well as the Website. This is ensured by building the capacity of the platform host under the PC3 and in involving it in the development and outcomes of all activities of PC1.

Also, the investment projects implemented in PC2 will be installed/maintained/ managed by the project proponents during and after the completion of the GEF/UNIDO project (projects considered under PC2 have an average lifetime of around 20 years), guaranteeing in its way their individual sustainability.

Under PC2, a RE/EE project pipeline will be built (based on Outputs 2.1 and 2.3) and presented to potential investors. The pipeline will be continuously updated every time a sustainable energy project is identified. This will enable investors to count with new and updated information on potential investment projects at all times, reducing delays and reducing the provision of outdated information. The NSEIP will put forward a strategy and a plan for fundraising activities, that can include advertising and awareness/information campaigns, meetings, participation in conferences and investment forums etc. to ensure that there will be enough opportunities to present up to date information on potential investment project to potential investors even after the GEF/UNIDO Project finishes.

Additionally, PC2 proposes the creation of a financing facility, STP-SEFF, to release call for proposals to support RE and EE projects development during project implementation. Following the successful experience of the EREF, ECREEE will provide support, advice and lessons learnt to STP in order to set up the STP-SEFF and ensure its self-sustainability after project closure. Since project developers will be directly committed and also provide funding for their projects to be conducted, they will contribute to the general sustainability of the GEF/UNIDO project after finalisation.

On PC3, the training and capacity building activities are conceived under a “*Train-the-Trainers*” approach in order to ensure that any knowledge built during the execution of this GEF/UNIDO Project is transferred to other people in STP even after project closure. The Trainers will be trained during the project at CERMI installations in Praia, Cabo Verde, and will be afterwards capable of providing technical assistance to enterprises and coaching on RE and EE project implementation, and of conducting Training Programmes for stakeholders interested in developing RE/EE projects in STP as well as to other PALOP and SIDS. Moreover, under PC3 a first of its kind Portuguese online Training programme on Sustainable Energy Solutions for Islands will be established and carried out, and this programme can be used after the project ends for other Portuguese speaking countries that are interested in developing sustainable energy island solutions. In addition, social sustainability will be strengthened due to the systematic gender mainstreaming throughout the project cycle, the involvement and empowerment of women.

Potential for scaling up:

There is a strong potential for scaling-up associated to the investment projects proposed under this GEF/UNIDO project. Whether RE or EE, there is potential for involving the private sector from both the national and the international scene through the STP-SEFF, which will release call for project proposals. The STP-SEFF will provide project developers and business start-ups with a solid framework, without which it would be less likely that the private sector would get involved in the RE/EE field. Through the STP-SEFF, the project developers will receive advice on sourcing finance, technical assistance and (if considered appropriate by the team) even with some seed finance to conduct the project. Therefore, the STP-SEFF will be an opportunity to encourage participation of the private sector and harness all the potential for scaling-up RE/EE projects in the country. That will be complemented by the dissemination of results (Output 2.3) and case studies on successful investment projects to further encourage investment in RE and EE.

The NSEIP (PC2) will focus on grid-connected and off-grid small to medium scale RE projects will include a list of projects with information on project promoters, project development status, the need for additional studies, the scale of capital expenditure required, among others, and will be used to attract local and international financiers and donors to invest in the sustainable energy sector in STP, by presenting it to potential investors and financiers in at least two (2) investment forums. As mentioned previously, a strategy for fundraising and continuous update of the projects pipeline will be put together, enabling the conduction of activities to encourage investment and replication of projects.

The type and size of the hydropower projects (see table) can be easily replicated in many river basins across the country. There are several studies that were conducted in the past that show the potential of the several rivers that could be harnessed by small hydropower schemes.

In addition, solar PV systems can complement the hydropower generation, are easy to transport and deploy even in a geography like the one from STP and provide a cleaner alternative to diesel-based generation.

The EE measures proposed within this project, replacement of old light bulbs with more efficient ones and reduction in air conditioners use at night, is for Príncipe Island but can be replicated in Sao Tomé island as well, yielding even higher energy savings due to the larger number of buildings to which they can be applied.

A.2. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact.

N/A

A.3. Stakeholders. Please provide the Stakeholder Engagement Plan or equivalent assessment. (Type response here; if available, upload document or provide link) In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement. The integration of RE and EE in electricity system, requires an effective collaboration and participatory approach with the beneficiaries as their needs and past experiences as well as their ability and willingness to pay have to be properly considered. Stakeholder consultation and involvement is at the heart of the PPG as well as of project implementation phase.

At PPG Stage:

During the PPG, meetings and workshops were conducted in STP to engage those stakeholders relevant to the project, such as Government partners, agencies, institutions into the definition of activities and for the identification of investment projects. Their feedback on the initial project structure and proposed activities was collected and it was fundamental in order to adapt the project’s design to their needs and country goals. Also, international donors, agencies and other organisations who are currently developing energy-related projects in the country were interviewed to discuss possible synergies with their interventions and avoid unnecessary overlapping on project components.

The following were the stakeholders directly and indirectly involved in the project definition at PPG stage:

Stakeholders	Roles and Responsibilities in Project Preparation
Government Partners	
Ministry of Infrastructure, Natural Resources and Environment / Directorate-General of Natural Resources and Energy (Ministério das Infraestruturas, Recursos Naturais e Ambiente (MIRNA) / Direcção Geral dos Recursos Naturais e Energia (DGRNE)) Directorate-General of Environment (Direcção Geral de Ambiente - DGA)	Project’s main executing partners. DGA provided suggestions regarding capacity building needed at government level identifying hydropower as one of the main topics that need to be addressed. They also highlighted the need for an improvement in the legal framework to celebrate contracts with IPPs. In addition, they provided suggestions on how PC1 could be modified in order to avoid overlapping with the GEF/UNDP Project “ <i>Promotion of environmentally sustainable and climate-resilient grid-based hydroelectric electricity through an integrated approach in São Tomé and Príncipe</i> ”. Some ideas proposed were to work on fiscal incentives, to increase the capacity building activities on RE in the country and to focus on EE initiatives as well.
Ministry of Finance, Commerce and Blue Economy / Directorate-General of Tourism and Hotels (Ministério das Finanças, Comércio e Economia Azul (MFCEA) / Direcção Geral do Turismo e Hotéis (DGTH))	DGTH informed that the Government of STP wants to promote sustainable tourism and as such any investment on RE and EE are contributing to that. Although the STP National Tourism Strategy makes reference to de development of sustainable infrastructure on the sector, there are no orientations or specific studies on how to do it. The DGTH is preparing a series of activities in which the RE and EE component could be incorporated, namely: in the requalification of the tourism areas and in the awareness raising campaign for investing in sustainable tourism infrastructure.
National Water and Electricity Utility Empresa de Água e Eletricidade - EMAE	EMAE informed about the current status of the electricity sector and which ones are the main concerns to be addressed (rehabilitation of hydropower systems, energy efficiency, development of standards, capacity building on operation and maintenance of hydropower systems).
Projects Management Fiduciary Agency (Agência Fiduciária de Administração de Projectos (AFAP))	The AFAP provided advice on which hydropower schemes should be studied in detail: Bombaim, Guegue, Diogo Vaz and Agostinho Neto. They also informed that the LCPDP is being supported by the WB and that its outcomes should be taken into consideration. The Plan is expected to be finished during 2018.
General Regulatory Authority of STP	They referred that the project can contribute with strengthening the regulatory

(Autoridade Geral de Regulação de São Tomé e Príncipe (AGER))	framework to improve the administrative processes towards investing in RE, developing incentive mechanisms, among others. In addition, they also referred that EE is an important topic to address apart from RE.
National Fuel and Oil Company (Empresa Nacional de Combustíveis e Óleo (ENCO))	ENCO informed that the GEF/UNIDO Project will have an impact in the diversification of STP energy mix, and a consequent impact on their activities, as they are the main EMAE supplier. Although they are diversifying their activities (towards the sales of oils, activities in the aviation sector, gas for cooking) they are not looking into developing RE projects such as hydropower projects.
National Petroleum Agency (ANS-STP)	ANS-STP informed that they have an investment budget greater than USD 30 Million for the next 4 years and that this budget is to be executed according to the Government of STP investment decisions. RE projects can be submitted to the Government of STP and executed with ANS-STP funds, the only thing that is required is that the Government lets ANS-STP know where they should apply the fund.
Agencies, International Organisations and Partners	
UNDP	UNDP informed that the Project GEF/UNDP “ <i>Promotion of environmentally sustainable and climate-resilient grid-based hydroelectric electricity through an integrated approach in São Tomé and Príncipe</i> ” was restructured and the execution period was extended until 2020 (original was 2013-2017). This project aims at facilitating the rehabilitation of several small hydropower plants by 2020; therefore, synergies can be found with this GEF/UNIDO project and includes activities to improve the business environment for RE development. The activities proposed in this GEF/UNIDO project, took into consideration the on-going and future planned activities of this GEF/UNDP creating synergies with it and extending its implementation to EE, and thus, avoiding duplication of efforts.
ECREEE	ECREEE is the focal point for African SIDS within the SIDS DOCK initiative and therefore it has a mandate to work in STP. During the PPG stage several synergies and potential cooperation activities have been identified between the proposed GEF/UNIDO project and ECREEE, namely: <ul style="list-style-type: none"> • ECREEE has sustainable energy regional on-going programmes in which STP stakeholders can be involved, especially in the PC3; • ECREEE can enable knowledge transfer through lessons learnt from the implementation of similar projects as this GEF/UNIDO project in Cabo Verde and Guinea-Bissau of which he has also been and executing partners; ECREEE will support the proposed GEF/UNIDO project in the establishment and management of the STP Financing Facility for Sustainable Energy project and provide co-funding for the implementation of several activities and the establishment of the financial mechanism for investment projects.
AfDB	The AfDB will actively participate in this GEF-UNIDO project by participating in its management and coordination by being a member of the PMU and the PSC and through the provision of financing support for the development of the necessary studies to investments in RE infrastructure. AfDB is also cooperating with the GEF/UNDP project achieves (AfDB will invest in the needed infrastructure which includes on-grid small hydropower and strengthening the capacities of EMAE to manage new investments).
WB	The WB and the EIB are working with the Government of STP on the STP PSRP. The project includes the development of a LCPDP, an electricity demand forecast, a cost-recovery based tariff-structure and the improvement of the metering and tariff collection system. The GEF/UNIDO project was designed in coordination with this project.
EIB	
Civil Society Organizations (CSOs), particularly Local Private Sector Associations	
Chamber of Commerce, Industry, Agriculture and Services (Câmara do Comércio, Indústria, Agricultura e Serviços - CCIAS)	The CCIAS aggregates all productive entities in STP and one of its objectives is to enable access to credit, conduct events and provide support for doing business. They think that reliable energy access is one of the main constraints that businesses face in the country. Alternatives to link the electricity sector to what the CCIAS does through some type of incentive mechanism for investment could benefit local businesses. They also highlighted that local enterprises face barriers to enter the financial market and thus are not able to participate in projects, such as energy related ones.
TESE Associação para o Desenvolvimento (TESE Association)	TESE has been involved as NGO in the development of projects in the STP energy field: at the moment they are implementing a WB project that will provide information on the

for Development)	level of access to energy, the costs for the companies to have a feasible and reliable access as well as on possible options for the residential sector. TESE has a pool of internal experts that can be mobilised to provide capacity building on the field of sustainable energy. As low risk priority investment areas TESE considers that it would be good to develop sustainable energy projects in the old coffee explorations that are being rehabilitated for agricultural exploration as well as solution of the tourism sector.
Lawyers Order	The Layers Order has never worked on the energy sector field and they have no knowledge of STP lawyers operating on the field; thus, there is a lack of capacity. The Order considers that its members should build competences on the energy area through capacity building actions on the field.
Associations that promote gender equality and gender focal points	Stakeholders will also include gender experts, gender focal points from relevant ministries, local and international associations and/ or agencies, NGOs, and CSOs promoting gender equality and women’s empowerment, in particular those focusing on the nexus between gender, energy and entrepreneurship. For instance, the National Institute for Gender Equality Promotion will be part of the NSEP. Through their regular engagement the project will also ensure that gender perspectives are integrated throughout project activities. Furthermore, equal participation of women will be encouraged at all levels, for instance as experts, participants and consultants for training and capacity building activities, as well as in the advisory group.
SIDS DOCK	Pre-discussions with SIDS DOCK on a possible cooperation were held and positive.
Academic institutions, schools and training institutes	
CERMI	CERMI, located in Cabo Verde, is a Corporate Public Entity whose vision is to be a “centre of excellence” in the field of RE and EE and industrial maintenance at national level, ECOWAS and the PALOP. CERMI offers and has been delivering several courses on RE and EE, including “Train the Trainers” programmes for the ECOWAS region, including Cabo Verde and Guinea Bissau. Lux-Dev has just started a regional program “Anchorage of CERMI to ECOWAS” in which support is being provided to CERMI to train trainers on RE and EE in the ECOWAS and PALOPs. Capacity building activities in the PC3 of this GEF/UNIDO project were design in cooperate with CERMI, so that through this project interested stakeholders in becoming trainers on RE and EE from STP will come to CERMI (in Praia) to receive training.
CIEMAT	CIEMAT has been actively involved in awareness raising and capacity building on sustainable energy solutions for Islands under the SIDS DOCK umbrella. CIEMAT will cooperate with the proposed GEF/UNIDO project (PC3) in the development and implementation of the development of online modules for the training course on sustainable energy solutions for islands.
AEE-Intec	Pre-discussions on the possible participation of STP experts in workshops and knowledge task of the Solar Heating and Cooling Program of the IEA were discussed. An associated membership might be facilitated. A similar cooperation was already implemented in Cabo Verde under a UNIDO GEF project.
Private sector, investors	
Energia de Portugal (EDP)	EDP will work with UNIDO on the implementation of the hydro power and solar PV stations in Principe. EDP has already committed significant co-finance for the investment projects. The GEF project will provide technical pre-investment support and measures to ensure the long-term sustainability of the projects for STP.
ALER	UNIDO partnered with ALER on the organisation of the validation workshop and the development of the baseline report.

At project implementation:

The project execution will be undertaken through multiple contractual arrangements between UNIDO and national governmental entities and private operators. The following table summarises the roles of the different stakeholders that will be involved during project implementation.

Roles	Stakeholders
GEF Implementing	UNIDO

Agency	
Project's Main Executing Partners	MIRNA/DGRNE, MIRNA/DGA: MIRNA through the DGRNE will be the main counterpart as recipient government. DGRNE will host the NSEP and coordinate its activities and will provide support throughout project execution (e.g. provide human resources, office space, etc.) in many activities as described under the "Project Approach". DGA will also be an active participant of the project and the NSEP.
Other Executing Partners	Governmental: EMAE is the national utility and is involved in energy and water related projects and in the electricity market, AGER as regulatory agency interested in improving the regulatory framework for RE they will be interested in providing inputs under PC1, by means of participating in the NSEP. EMAE and AGER will receive training as well. ECREEE is one of the main executing partners whose support will be mostly crucial in the development of the STP-SEFF due to their experience with the EREF but will also provide inputs and support for the SEforAll Campaign and other capacity building activities. NGOs and other CSOs: ALER, TESE and CERMI will provide support for capacity building and training activities. ALER will additionally support the development of the RE/EE Status Report for STP. Project promoters/investors: EDP and others (to be identified during implementation) will be fundamental for the development and implementation of the investment projects to demonstrate viability of RE and EE projects in STP. Subcontractors (selected by competitive bidding) will be procured to provide technical assistance in several activities as needed by the project.
Strategic implementing partners and Co-financiers	Other Governmental partners: INPIEG is relevant for providing inputs in gender-related topics and women empowerment issues related to the project under the NSEP meetings, MFCEA provides co-financing, CCIAS could provide support to promote project activities. Development partners: WB (AFAP), EIB, UNDP, AfDB are crucial for the development of project components and activities that work synergistically with the components and activities of the present GEF/UNIDO project. Technical partners: CIEMAT will be involved in capacity building activities and providing training sessions
Other Stakeholders	All stakeholders already contacted at PPG stage, plus other: public and private institutions, market players and enablers, international cooperation, rural associations, financial institutions interested in the development of sustainable energy projects, STP citizens.

Stakeholder participation in the project activities will be recorded in registries, reports, newsletters, newsflash etc. This will be important to measure the key performance indicators of the project during its execution.

Select what role civil society will play in the project:

- Consulted only;
 Member of Advisory Body; contractor;
 Co-financier;
 Member of project steering committee or equivalent decision-making body;
 Executor or co-executor;
 Other (Please explain)

A.4. [Gender Equality and Women's Empowerment](#). Provide the gender analysis or equivalent socio-economic assessment. (Type response here; if available, upload document or provide link)

➔ **Gender dimension of the project**

Based on the findings of the baseline analysis it can be noted that gender equality and women's empowerment have not been a significant priority in energy policy and programs so far. Gender has not been actively considered in most of the energy-related policies and regulations. Nevertheless, addressing gender issues has been a priority for the Government of STP in the last years, which is reflected in the creation of the National Institute for the Promotion of Gender Equality (*Instituto Nacional para Promoção da Igualdade e Equidade de Género*, INPIEG), in 2007 by Decree-Law no. 18/2007. The INPIEG main objective is to ensure that the Government of STP implements and applies the National Strategy for Gender Equality (ENIEG, *Estratégia Nacional para a Igualdade e Equidade de Género*) that was developed in 2007 and updated in 2013. The ENIEG is structured in five strategic directions:

- Economic promotion of women in rural and urban environments;
- Promoting equality in education and training;
- Improvement of the reproductive health and sexual health status of adolescent girls and women;
- Strengthening the implementation of women's rights and participation in decision-making; and
- Strengthening the capacity of intervention of institutional mechanisms in favour of gender equality.

At national level, equality between men and women is also mentioned in the National Constitution (article 15°). At international level, STP has signed in 2010 (but still did not ratify) the “Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa”, and in September 2015 signed and acceded to the Fourth World Conference on the Declaration of Women in Beijing, better known as the Beijing Declaration (further information is included in the Baseline Report, Annex K).

The gender analysis during PPG (see baseline report) identified the specific circumstances of women and youth and provided a basis on how the priorities and needs of these groups are to be integrated in the implementation of the project.

The commitment of UNIDO towards gender equality and women’s empowerment is demonstrated in its policy on GEEW (2015), which provides overall guidelines for establishing a gender mainstreaming strategy. Moreover, UNIDO has developed an operational energy-gender guide to support gender mainstreaming of its sustainable energy initiatives. UNIDO recognizes that energy interventions are expected to have an impact on people and are, therefore, not gender-neutral. In fact, due to diverging needs and rights on energy consumption and production women and men are expected to be affected differently by the project.

➔ **Project gender mainstreaming strategy:**

To mainstream gender into this project, the baseline analysis carried out at PPG phase identified entry points for defining gender-responsive project outcomes, outputs, targets, as well as related activities (such as Outputs 3.2 to 3.6 for example).

The project has the aim to ensure that its benefits will be equally accessible to both men and women. Special efforts will be made to involve NGOs and associations with gender focus as consultants, participants and entrepreneurs in all relevant activities. The guiding principle of the project will be to ensure that both women and men are provided equal opportunities to access, participate in, and benefit from the project. In practical terms:

- Gender-sensitive recruitment will be practiced at all levels where possible, especially in the selection of the project staff: Gender-neutral TORs will be used to mainstream gender in the activities of consultants and experts, encouraging a gender-sensitive recruitment.
- All decision-making processes will consider gender dimensions. At project management level, Project Steering Committee meetings will try to have a gender-balanced composition. Also, at the level of project activity implementation, effort will be made to consult with stakeholders focusing on gender equality issues, being especially relevant in the Project Component 1, under the outputs of policy review and formulation.
- To the extent possible, efforts will be made to promote participation of women in training activities to be conducted under PC3.
- When data collection or assessments are conducted as part of the project implementation, gender dimensions will be considered. This will be done by including sex-disaggregated indicators for monitoring and evaluation stages (as can be seen in the Project Results Framework), performing gender analysis, etc.

In sum, the project was designed to acknowledge the differences of sustainable energy project’s impacts considering distribution of economic activities and social roles between women and men in STP, in line with GEF 6 Programming Strategy. The project provides for special attention to energy and gender nexus solutions, seeking to support gender mainstreaming and empower women involved in energy projects.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women’s empowerment? (yes /no) If yes, please upload gender action plan or equivalent here:

The project document promotes gender equality and women’s empowerment.

If possible, indicate in which results area(s) the project is expected to contribute to gender equality:

- closing gender gaps in access to and control over natural resources;
- improving women’s participation and decision making; and or
- generating socio-economic benefits or services for women.

Does the project's results framework or logical framework include gender-sensitive indicators? (yes /no)

A.5 Risk. Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

The overall risk of this proposed project is low to moderate as detailed in the below table:

Risk	Impact on the Project	Likelihood	Risk Description and Mitigation Actions
<p>Institutional and Political Risks: Political instability can drive the project off-track</p>	Moderate	Low	<p>Although in the last couple of years STP has known political stability (STP has had a stable Government since 2014 up until today), before that there has been some political instability (between 1991 and 2014 STP has had 17 prime-ministers always supported by weak party coalitions). If political instability returns, there is a risk that it will impact the GEF/UNIDO project development and implementation. Nevertheless, the impact on the project should not be high as most of the activities are not expected to be impacted. The development of larger infrastructure investments may be affected due to the needed trust from investors.</p> <p><i>Probability: Low</i> <i>Mitigation Measures:</i></p> <ul style="list-style-type: none"> • The GEF/UNIDO project was established in close partnership with the Government but also the utility and regulator from the very beginning. • The GEF/UNIDO project will be implemented in cooperation with international partners with influence (e.g. WB, EIB, AfDB). • The GEF/UNIDO project builds on SIDS-SIDS cooperation between Cabo Verde, STP and Guinea-Bissau. • Larger infrastructure investment projects will be developed in close cooperation with known international partners/organisations and investors (e.g. EDP from Portugal)
<p>Institutional and Political Risks: Lack of Government commitment towards RE and EE can drive the project off-track</p>	Moderate	Low	<p>The commitment of the Government of STP to RE and EE might change, and this can hinder the project implementation. Moreover, there may be some reluctance from the Government and stakeholder’s (e.g. utility) in integrating and articulating the project findings into national policy as well as to implement the established policies, regulations and investment and capacity building frameworks.</p> <p><i>Probability: Moderate - Low</i> <i>Mitigation Measures:</i></p> <ul style="list-style-type: none"> • The GEF/UNIDO project has been developed based on the request from the Government of STP which has expressed its willingness and aim to develop and deploy sustainable energy (RE/EE) technologies in its energy sector. • Under PC1, the project will establish the NSEP to continuously discuss and guide the sustainable energy development in the country as well as to promote cooperation among projects in the area. As such, the recommended strategy derived from these discussions will have a high level of ownership and therefore is expected to be articulated within the national political framework. • In addition, in PC1 an Energy Sector Database and Website will be developed to inform interested energy sector stakeholders as well as

Risk	Impact on the Project	Likelihood	Risk Description and Mitigation Actions
			<p>the public in general about the energy sector, including sustainable energy development and relevance, as well as to inform on the activities and progress achieved by the different GEF/UNIDO project components.</p> <ul style="list-style-type: none"> The GEF/UNIDO project under its PC3 includes capacity building and awareness raising activities for stakeholders to get more involved in sustainable energy development.
<p>Involvement Risk: Sector stakeholders do not participate/engage actively in the project</p>	Low	Very Low	<p>Due to the lack of information and awareness in sustainable energy technologies, there is a risk that there will be no active participation from stakeholders. However, the project aims at addressing this barrier. In addition, the very high cost of traditional energy (fossil fuel based) in the country means that organizations are looking for and considering new alternatives such as RE to reduce the dependence on fossil fuels. The level of interest and collaboration shown by enterprises during the PPG phase leads to legitimately expect strong participation.</p> <p><i>Probability:</i> very low. During the PPG stage, energy sector stakeholders as well as stakeholders from other sectors were contacted and involved in the definition of the GEF/UNIDO project. The general response was of strong support and interest to participate in the project.</p> <p><i>Mitigation Measures:</i> A well-structured national dissemination/awareness raising campaign demonstrating the viability of the investment projects and outlining the opportunities during project implementation combined with an active dialogue and involvement of associations at the national and local level during the whole project duration (e.g. through the NSEP) will ensure the desired stakeholder response and involvement in the project.</p>
<p>Technical and Market Risks</p>	Moderate	Low	<p>The sustainable energy systems are not technically viable in the areas where they are installed, and the business models proposed do not allow beneficiaries to invest in the technology.</p> <p><i>Probability:</i> Low.</p> <p><i>Mitigation Measures:</i> The GEF/UNIDO project was designed to facilitate knowledge exchange/cooperation with Cabo Verde and Guinea Bissau where already similar projects were implemented. In addition, the capacity building programmes proposed involve the delivery of information and training specifically addressing and with the aim of clarifying these types of risks.</p>
<p>Technical Risks: Delay in the development of investment projects can hinder the availability of results</p>	Moderate	Low	<p>There is a technical risk associated with the development of the investment projects due to reduced experience in the country in its development and implementation projects.</p> <p>There are no noteworthy technical risks associated to the policy measures and capacity building activities proposed by the GEF/UNIDO project. All of them are well proven interventions, tested by national experiences and in many other countries.</p> <p><i>Probability:</i> Low.</p> <p><i>Mitigation Measures:</i></p> <ul style="list-style-type: none"> Execution of activities to be implemented under PC2 will be carried out with the support from international experts/companies with demonstrated and successful past experience (e.g. EDP). Only mature and proven small to medium scale RE technologies are being proposed to be installed as investment projects. Capacity building and enabling activities will pay special attention to further defining the existing baseline in order to develop effective

Risk	Impact on the Project	Likelihood	Risk Description and Mitigation Actions
			<p>tailored and well-targeted training programmes and curricula.</p> <ul style="list-style-type: none"> • The status of projects will be regularly reviewed, and any necessary corrective actions will be promptly taken. • Investment project results and lessons learnt will be widely disseminated.
<p>Financial Risk: Incentive and financial support systems are insufficient.</p>	<p>Moderate</p>	<p>Low-Moderate</p>	<p>Private financiers do not partner in business initiatives (incl. supporting the mechanisms package, co-finance of investment projects etc.) for beneficiaries' access to financing. In addition, the ability of companies to invest in sustainable energy projects will impact the replication of the investment projects and the long-term market for sustainable energy solutions in STP. Access to finance in STP is possible but at very high interest rates. Also, there is no experience in STP on the involvement of the local finance sector in providing financing for this type of projects.</p> <p><i>Probability: Low to moderate.</i> <i>Mitigation Measures:</i></p> <ul style="list-style-type: none"> • Early dialogue with grant providers was initiated during the PPG stage and will continue throughout the GEF/UNIDO project implementation stage. • During the GEF/UNIDO project the STP-SEFF will be established to support the development of sustainable energy projects. This will be designed and implemented with support from ECREEE that has supported the development of similar financial facilities in Cabo Verde and in Guinea-Bissau and that manages and operates its own financial facility for the ECOWAS region (EREF) • One of the key advantages to invest in sustainable energy is the offset of either grid electricity or diesel fuel – both of which are very expensive and dependent on third parties in STP. As part of the training in PC3 life cycle analysis will be taught to show the lifetime benefits of sustainable energy projects, particularly in a volatile fossil fuel market. Demonstrating these benefits is expected to lead to further investment in sustainable energy projects. • For scaling up/replicating investment projects additional technical assistance will be provided. • Training will also be provided to local financial institutions so that they fully understand the risks and benefits of sustainable energy projects and provide appropriate financial mechanism.
<p>Socio-economic and environmental risks Some of the sustainable energy investment projects might have some socio-economic and environmental impacts</p>	<p>Low</p>	<p>Low</p>	<p>Some of the envisaged sustainable energy investment projects might have some limited negative social, economic and environmental impacts for a limited number of stakeholders.</p> <p><i>Probability: Low.</i> During the PPG phase, an Environmental and Social Management Plan (ESMP) (Annex N) was developed to guarantee that environmental and social elements are integrated into the project design and their impacts monitored. This Plan was carried out in close consultation with relevant stakeholders including governmental and civil society organizations as well as the private sector in line with GEF and UNIDO policy.</p> <p><i>Mitigation Measures:</i></p> <ul style="list-style-type: none"> • ESMP developed. This plan will be implemented throughout the implementation of the GEF/UNIDO project.

Risk	Impact on the Project	Likelihood	Risk Description and Mitigation Actions
			<ul style="list-style-type: none"> In all investment projects to be implemented under PC2 the environmental and social impacts will be identified and corrective/mitigation measures adopted if necessary. The investment projects that will be supported under the hydro power sector, are run-off-river projects with a small impact on the environment. No big dams will be supported through this project.
Climate Change Risk: Negative impacts of climate change	Low	Moderate	To support the Government on increasing sustainable energy production and supply (low carbon development pathway), the GEF/UNIDO project will identify and support the development of RE and EE investment projects. The availability of water resources, which are potential resources for RE investment projects, could be affected by climate variability. <i>Probability: Low to Moderate</i> <i>Mitigation measures:</i> <ul style="list-style-type: none"> Feasibility studies will address the potential impact of climate change on the life-cycle of the identified sustainable energy projects. There is a need to estimate the changes in the river flows regarding hydropower development. In general, the increased use of RE will have positive impacts and increase the ability of the domestic population to adapt to climate change. The sustainable energy investment projects will also integrate an impact mitigation strategy to address any potential impacts identified during the project feasibility analysis. An organised schedule and project monitoring will assist in the identification of delays and reprogramming of activities execution.
Oil Market Prices Risk: Low prices of oil / continued low prices of oil make RE projects and business not viable	Moderate	Low	The decision to invest in sustainable energy systems (RE/EE) by industries will be based on cost savings opportunity. In the recent past, the price of oil has been varying a lot: between 2013 and 2016 the price of the barrel of oil dropped drastically from around 110 USD/barrel to values below 50 USD/barrel and from 2016 to 2017 the price of the barrel of oil has been increasing to values between 60 – 70 USD/barrel ²⁶ . According to information from the EIA between now and 2050 the price of the barrel of oil is supposed to increase to values between 110-125 USD/barrel ²⁷ . The trend in the last few years could make some of the industries, farmers, project proponents and the Government no longer interested in investing in RE systems when the price of oil, and therefore diesel, decreases. This could particularly happen if the domestic off-shore oil resources are finally available in STP. <i>Probability Low</i> <i>Mitigation Measures:</i> <ul style="list-style-type: none"> The criteria used on the project to show the attractiveness of sustainable energy systems (RE/EE) do not only focus on cost savings but include other aspects such as energy independence and reliability of supply, as well as, local and global environmental benefits (e.g. reduction of GHG emissions). In all supported investment projects under PC2 an analysis of the cost of the sustainable energy technology vs conventional energy

²⁶ Information extracted from: <http://www.infomine.com/investment/metal-prices/crude-oil/5-year/>

²⁷ US Energy Information Administration (EIA), Evolution up until 2050 of the barrel of oil cost: <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=12-AEO2018&cases=ref2018&sourcekey=0>

Risk	Impact on the Project	Likelihood	Risk Description and Mitigation Actions
			<p>systems will be undertaken.</p> <ul style="list-style-type: none"> In PC3, awareness raising on the economics of sustainable energy solutions will be undertaken. This awareness raising will include the comparison of life-cycle costs of diesel generation and other RE technologies.

A.6. Institutional Arrangement and Coordination. Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

→ Project implementation

UNIDO is entrusted by the Government of STP and by the GEF with the mandate to implement the project and to achieve its objectives, outcomes and outputs within its budget and time frame, as approved in this GEF CEO Endorsement. UNIDO is accountable to the GEF for the funds of this project and will, in close consultation with MIRNA/DGRNE and other executing partners implement the project according to the established UNIDO’s rules and regulations, the applicable GEF requirements and the national laws. This means that UNIDO will maintain the oversight on the project implementation, manage the overall project budget, supervise the project execution, as well as organize planned evaluations. In addition, UNIDO will provide execution support for the procurement of goods and services, as well as recruitment of technical experts. The full or partial title and ownership of equipment purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the UNIDO Project Manager in consultation with project stakeholders. Finally, UNIDO will support the co-ordination and networking with other related initiatives and institutions in the country and in the region.

→ Decision-making level

Coordination among Government agencies and the Implementing agency will be achieved through a Project Steering Committee (PSC) which will be chaired by MIRNA/DGRNE. The PSC will provide the necessary guidance and coordination to the project implementation, and will invite members and experts for specific meetings, as needed. The PSC decisions shall be made in line with the approved CEO Endorsement, GEF and UNIDO guidelines. The PSC will meet on a biannual basis. The proposed additional members of the PSC are: MIRNA/DGA, AfDB, SIDS-DOCK, ECREEE, EMAE, AGER, INPIEG, TESE and CCIAS. This is depicted in Figure 6.

Funding Partner:

The Global Environment Facility (GEF)

Implementing Agency:

UNIDO

Project Execution:

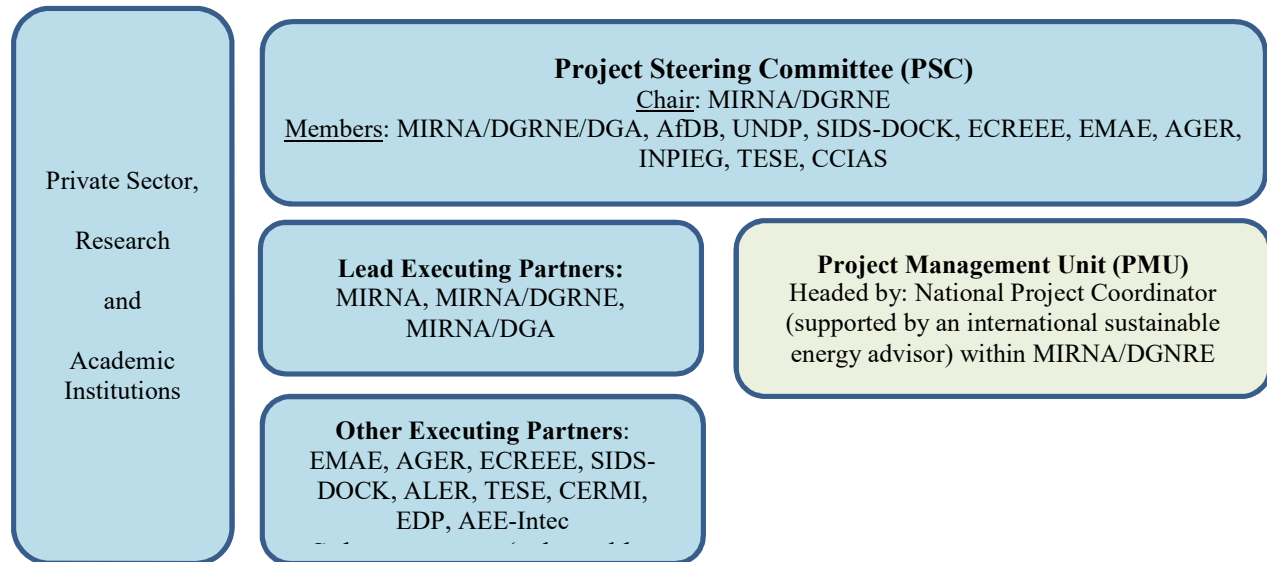


FIGURE 6: IMPLEMENTATION AND EXECUTION STRUCTURE OF THE GEF PROJECT

The PSC will be in line with the approved project document and GEF guidelines and be responsible for coordinating the implementation of the project in accordance to the established UNIDO's rules and regulations, the applicable GEF requirements and the national laws under UNIDO's oversight, who will supervise project execution. In line with UNIDO function and approved project document, the PSC will give recommendations on planning coordination, implementation, monitoring and evaluation of the GEF/UNIDO project activities; will provide contribute with the revision and approval of annual work plans and annual GEF reporting as well as annual budgets. The PSC will additionally provide guidance on strategic issues and activities and on supervising the PMU.

→ Project execution

The PMU will be established within MIRNA/DGRNE in close coordination with UNIDO, the AfDB and other partners. MIRNA/DGRNE and AfDB have confirmed co-funding. A National Project Coordinator (NPC) will be recruited following UNIDO's rules and regulations. He/she and his/her team will be assisted by an international sustainable energy advisor working as integrated expert in MIRNA. UNIDO will supervise the operation of the PMU located in MIRNA. The PMU will be comprised of an NPC which will closely coordinate work with UNIDO, AfDB and the other executing partners. The PMU is responsible for the day-to-day management of project activities and for the coordination of stakeholders. The NPC will be responsible for:

- Elaborating a Project Work Plan
- Coordinating the management and activities implementation as set out in the project document in close partnership with the cluster manager;
- Coordinating the project execution with relevant stakeholders and participating organizations;
- Reviewing the ToRs for project team members, including consultants and contracting/subcontracting agencies;
- Preparing Annual Project Reports (APR) and other relevant reports for submission to UNIDO and GEF Secretariat. Chair the PMU monthly meetings. Providing guidance to the PSC for execution and adherence to the planned milestones and to ensure that project activities conform to the agreed project document;
- Helping PSC to ensure that project activities are completed in accordance to the agreed GEF CEO Endorsement;

- Coordinating and supervising the work carried out by project consultants/contractors (international & national). Reviewing consultant's reports, project budget and all other administrative arrangements as required by national and UNIDO procedures;
- Preparing the project annual work plan and budget as well as its timely submission;
- Coordinating the communication and dissemination of the project results, lessons learned and success stories that are important for the sustainable and future development of the involved market sectors in STP;
- Submitting regular progress reports to UNIDO.

The majority of activities of the GEF Project will be executed through execution partners. The particular role of the partners is better described in the stakeholders' section (A.3).

Stakeholders Engagement and Communication

With regards to the stakeholders' engagement during the execution of the project, it is crucial to have the support from local multipliers in addition to the organisations already involved in the project execution to reach as many people as possible. Engagement activities include, but are not limited to:

- Providing information via the projects Website developed in PC1, e-mails, newsletters, publications on the organisations' web pages;
- Providing information through radio and/or TV;
- Providing information through local newspapers and journals.

A registry of the people engaged in workshops and events promoted by the GEF/UNIDO project will be kept for monitoring purposes including a breakdown by gender type in order to monitor the corresponding gender indicator, where applicable, in accordance to the Project Results Framework (See Annex A).

UNIDO and GEF logos must be inserted in all the relevant project publications in recognition of the inputs they made to the project. Any citation of the publications related with projects financed by GEF must acknowledge the role played by GEF.

CSOs and NGOs: Apart from the one already mentioned, potential CSOs and NGOs, including those focusing on gender equality issues and advocating women's empowerment, such as women's associations, will be consulted and/or involved whenever appropriate during GEF/UNIDO project implementation. As reference, there is a list of women's associations present in STP in the Baseline Report (see Annex K). Regular consultations with stakeholders and local beneficiaries will ensure that the project's impact on and appropriation by the local communities can be assessed throughout project implementation.

Coordination with other relevant GEF-financed projects and other initiatives

This GEF/UNIDO project has strong synergies and will be closely coordinated with the GEF/UNDP project "*Promotion of environmentally sustainable and climate-resilient grid-based /isolated hydroelectric electricity through an integrated approach in São Tomé and Príncipe*" (GEF-5 (2013-2020) GEF ID 5334) under implementation in STP. As such, this GEF/UNIDO project will diligently consider the lessons learnt and knowledge acquired from the GEF/UNDP project and will take advantage of the strong partnerships forged under it to explore future collaboration in sustainable energy initiatives. The GEF/UNDP Project aims at introducing an integrated energy and ecosystems-based approach to on-grid and decentralized small hydro-electricity generation in STP, by leveraging \$20.7 million in multilateral and private sector financing over its implementation period. This, in turn, is expected to generate direct global benefits of 137,200 tons CO_{2e} over the same period in avoided GHG emissions. The main objective at the start of the project was to set up a guarantee fund for hydropower projects to reduce the investment risks for private investors. However, the continued low interest of the private sector has demonstrated that further support for the mitigation of other pre-investment barriers is needed. For example, one major barrier for the private sector is the availability of risk capital for the development of pre-investment studies. Although the guarantee fund for hydropower project was established, it could not be executed, and the project got hold on in terms of the implementation of the energy sector activities for a few years. Recently, the project was restructured and the 1 Million USD available in guarantees were directed towards the implementation of a series of activities to improve the policy, legal and regulatory framework for renewable energy. Therefore, it was agreed that the policy component of the GEF/UNIDO project will focus more on energy efficiency and renewable energy technology fields, currently not well covered by UNDP (e.g. solar-thermal). Moreover, the investment component of the GEF/UNIDO project will particularly focus on mitigating the pre-investment barriers for project developers.

The project will also coordinate and cooperate with on-going GEF/UNIDO projects under implementation or that are envisaged to start implementation in Guinea-Bissau and Cabo Verde.

This GEF/UNIDO project is aligned with the UNIDO’s Mid-term programme framework 2018-2021²⁸, namely the strategic priority of safeguarding the environment as the project is:

- Promoting the use of RE and EE for electricity generation and encouraging energy saving, through the identification and implementation of low-carbon technologies, development of policies, regulations and standards as well as management practices;
- Supporting STP in meeting its obligations under multilateral environmental agreements.
- Focusing on the sustainable use of energy and renewable resources (mostly hydrological ones);
- Promoting EE practices in energy consumption and management.

Furthermore, the project is also aligned with the GEF2020 Vision Statement of Theory of Change which supports interventions that achieve deep, systemic and sustainable change with large-scale impact in the global environment (see Figure 7).

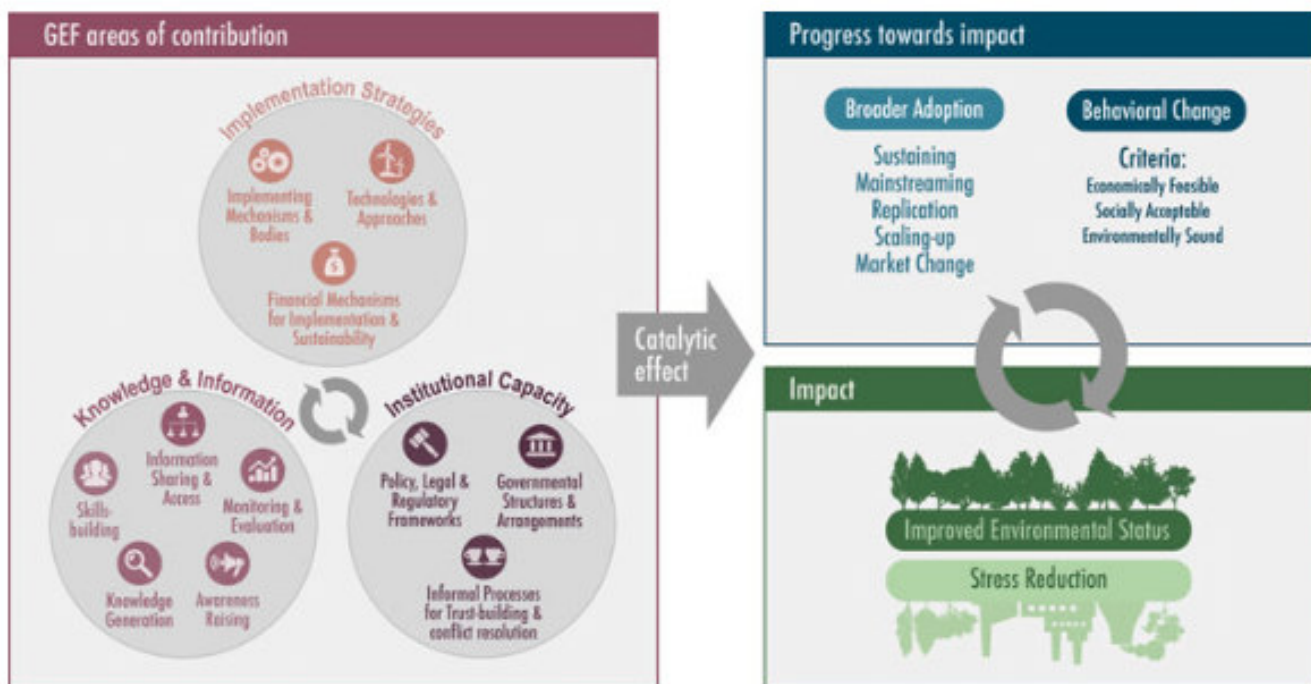


FIGURE 7: GENERAL FRAMEWORK OF GEF THEORY OF CHANGE²⁹

Additional Information not well elaborated at PIF Stage:

A.7 *Benefits*. Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

²⁸UNIDO’s Mid-term programme framework 2018-2021, available at: https://www.unido.org/sites/default/files/2017-05/IDB.45_8_Add.2_2_E_Medium-term_programme_framework_2018-2021_1703143E_20170522_0.pdf

²⁹ General Framework of GEF Theory of Change, https://www.researchgate.net/figure/General-framework-for-GEF-theory-of-change-Source-GEF-IEO-2014_fig1_312326246

This GEF/UNIDO project fits into the national policies for the promotion of sustainable energy use. The project is expected to deliver tangible socioeconomic benefits for STP in the targeted sectors as a whole and individually for men, women and their families.

The socioeconomic benefits at national level (country) are achieved as a result of the expected economic growth in the targeted sectors. The inclusion of cleaner technologies in STP’s energy sector, environmental impacts avoided, and social impacts achieved through an access to cleaner energy sources for energy generation will have impacts across all sectors of activity and for the population in particular. Additionally, the project will contribute to reducing economic dependence on fossil fuel imports for electricity generation through strengthening the diversification strategy by increasing the use of RE technologies and reducing energy demand through the adoption of EE measures.

The overall GEF/UNIDO project concept also responds to several SDGs³⁰, mainly:

- SDG 7 – ensure access to affordable, reliable, sustainable and modern energy for all;
- SDG 9 – build resilient infrastructure, promote sustainable and inclusive industrialization and foster innovation;
- SDG 12 – ensure sustainable consumption and production patterns;
- SDG 13 – take urgent action to combat climate change and its effects.

Indirectly, the project has positive implications for:

- SDG 1 (end poverty in all its forms everywhere) particularly target 1.5 to “By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters”;
- SDG 5 (achieve gender equality and empower all women and girls), particularly target 5.5 to “Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life”; and
- SDG 8 (promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all), particularly targets 8.2 “achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors” and 8.3 “promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services”.

The following table summarizes some of the socio-economic benefits yielded by the project.

TABLE 10: SOCIO-ECONOMIC BENEFITS FROM THE GEF/UNIDO PROJECT

Benefits	Summary description
Investment leverage	The total amount that the GEF would provide for this project is approximately USD 1.58 million, which leverages a total co-financing amount of approximately USD 23.4 million from other sources.
Jobs created	<p>Provided the local interest in working in sustainable energy projects is fostered through this project and thus grows, there could be potential for the generation of the following type of jobs:</p> <ul style="list-style-type: none"> • Local workers for the construction, operation and maintenance of RE and EE projects and associated services provision; • Teachers/trainers providing courses on RE technologies and EE in local educational institutions (e.g. universities) and/or organisations, that may provide capacity building. • Local or foreign RE and EE technology providers (such as distributors of imported goods, e.g. solar PV devices, EE equipment etc) that can employ local technicians or engineers on RE and EE technologies to do the installation, operation and maintenance of installed

³⁰ <https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals>

Benefits	Summary description
	<p>systems, etc.</p> <ul style="list-style-type: none"> • Local consultancy service providers that work on RE and EE systems design and feasibility (e.g. conducting energy consumption surveys, identifying areas to apply RE and EE, etc); • Foreign companies that may open local offices due to the growth of the clean energy market may employ local workforce for their operations and this could include specialised RE/EE staff as well as non- RE/EE specialized staff (e.g. administrative staff)
<p>Positive impacts for urban and rural companies and households, as well as the Government and the utility</p>	<ul style="list-style-type: none"> • Increased energy security in STP main cities through access to cost-effective base load hydropower generation. • Through the integration of cost-effective hydropower sources as well as other RE generation it is expected that the generation costs for the utility EMAE will decrease considerably. It can be expected that this will result into a potential reduction of the consumer tariffs for households, companies and industry. The Government will benefit from a reduction of expenses from the import of diesel. The reduction of the tariffs will lead to a higher productivity, competitiveness and income of companies and households. Public institutions will be able to deliver their services more effectively. • The reduction of power cuts and load shedding through hydropower use will reduce the widespread use of independent diesel back-up systems in the main cities and biggest energy consumers. Private companies/industries that install RE in their facilities will be able to have their independent energy supply system without having to rely on fossil fuels only. • Rural households with no expected access to the grid, will have independent mini-grids to supply energy for them, reducing the use of diesel generators in the villages. • By adding RE sources to the electricity grid, the State will also be able to reduce the grid's carbon emission factor and thus have a lower national carbon footprint. • State-owned buildings, industry, commercial establishment and householders will benefit from the adoption of EE measures for lighting and electrical appliances. • By using RE sources for productive uses (such as agriculture, tourism, etc) and adopting EE measures, these businesses will become more profitable as the adoption of sustainable energy technologies may reduce operation and maintenance costs (e.g. they do not need to incur in purchase of expensive fossil fuels for production and management) which in turn releases more capital for business expansion or creation of new businesses. • The creation of the STP SEFF for sustainable energy project development is expected to: <ul style="list-style-type: none"> ○ Contribute to the creation of a specialised market of services in the country that will foster the creation of new companies, new specialised jobs in the areas of RE and EE; ○ Help to facilitate investment and the development of sustainable energy projects;
<p>Positive impacts on environment and health</p>	<p>The deployment of the sustainable energy investment projects will have several positive impacts on the local and global environment:</p> <ul style="list-style-type: none"> • Reduction of GHG emissions and other associated air pollutants derived from fossil fuel combustion (CO, NO_x, SO₂, particulate matter) since it is replaced by RE sources. • Estimated GHG emissions reductions (direct) are 312,598 tCO_{2e} over projects' lifetime

Benefits	Summary description
	<ul style="list-style-type: none"> • Potential reduction of other wastes from fossil fuel consumption, distribution and transportation to the site of consumption. Although there will be emissions associated to the production, transportation, installation and maintenance of the RE technologies, these are expected to be very low during the lifetime of the RE systems in comparison to the emissions from a fossil fuel-based generation plant or grid electricity during its operation and maintenance. • With an increased access to reliable electricity, the families will reduce the use of other sources of energy for lighting than pollute the indoor air and compromises their health, such as candles, fossil fuel burners, etc. • The use of RE as a source of energy for lighting and communication (radio) can in some cases reduce the use of batteries, which are considered environmentally polluting if they are not disposed of correctly after use. • Avoidance of potential fossil fuel leaks that could occur if storage tanks or containers are not properly handled. Fossil fuel leaks can pollute the soil and water sources, such as the ocean and coastal areas where fossil fuel ships arrive at.
Competitiveness of RE vs diesel generation	<p>Although it is well known that RE projects need a higher upfront investment in comparison to diesel-based systems, the potential reduction in operation and maintenance cost that would be generated throughout their lifetime, which are mainly associated to the purchase of diesel fuel to operate, makes these technologies more attractive. Moreover, the exploitation of indigenous resources (hydro, solar, etc.), reduces the country's dependency on external sources of energy, i.e. imported fossil fuels, and further ensures reliability of energy supply. In addition, the implementation of RE projects generates positive environmental impacts, in comparison to diesel-based generation systems, since RE reduces GHG emissions and other air pollutants.</p>
Addressing gender issues	<p>This project will monitor gender-related indicators in order to follow up the percentage of women involved in sustainable energy initiatives. Women will be encouraged to participate in and contribute to the different project activities and their involvement will be tracked.</p> <p>It is expected that social and economic benefits from the implementation of sustainable energy initiatives will be shared equally by male and female workers in the respective sectors. Direct creation of jobs is an important opportunity that could benefit both men and women.</p> <p>In addition, there are benefits in terms of improvement of household air quality due to diminishing the use of fossil fuels for lighting, which will impact directly on women and children, who are the ones that more frequently stay at home.</p>

A.8 Knowledge Management. Elaborate on the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user-friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. participate in community of practices, organize seminars, trainings and conferences) with relevant stakeholders.

Knowledge management is inherent to UNIDO's operating modality by sharing experiences across its interventions worldwide. This has been demonstrated through many high-quality publications, organization of events, webinars, and more.

This GEF/UNIDO project will build on the ongoing international efforts to integrate sustainable energy in policies as well as in the national efforts to improve the accessibility and affordability of energy services. During and after the project, the data and knowledge collected and developed will be constantly shared with a wide range of stakeholders to guarantee that specific activities can be sustained and scaled-up:

- Within PC1 it is expected that the platform to be created (NSEP), the Website and the Energy Sector Database will not only be operational to share knowledge during the project but also after it. To ensure that, capacity will be built at the host of the platform/website/Energy Sector Database during the project on the management and update of these “*digital structures*”; in this context, a partnership with the ECREEE operated ECOWREX will be considered.
- The policy recommendations developed, incentive mechanism package and EE standards and guidelines (in PC1), training courses and material on RE and EE (created and developed in PC3) will be available not only during the project but also after GEF/UNIDO project implementation has finished. It is important to refer that the training courses will be established with CERMI and CIEMAT as strategic partners and will be distributed not only in STP but also in the ECOWAS region, SIDS and PALOP.
- Under PC2 the creation and maintenance/update of a sustainable energy *Project Pipeline* and a NSEIP, among others, will be advertised in the project’s Website as well as the case studies developed about the implementation and maintenance of these projects. It is expected that the sustainable energy *Project Pipeline* (see Annex J) is not only expanded during the project but will continue to be used after the conclusion of the project by the platform host and any other relevant institution. In fact, all the material developed will be shared with the national partners and other interested stakeholders in order to guarantee a sound transition of activities and responsibilities after the project is completed.

In this regard, all the relevant project documents and reports will be available through the project Website and websites of the executing counterparts. The involvement of ECREEE will ensure knowledge transfer to and from the West African region. The results of the project will be disseminated through ECREEE’s knowledge system. Moreover, SIDS-SIDS knowledge exchange on sustainable energy entrepreneurship will be created in partnership with the other regional sustainable energy centres based in Tonga (PCREEE) and Barbados (CCREEE). ECREEE is part of a UNIDO promoted SDG-7 partnership, which aims at the creation of a network of regional sustainable energy centres for SIDS in Africa, the Pacific, ECOWAS and Indian Ocean. The sub-network is part of the Global Network of Regional Sustainable Energy Centres (GN-SEC). Moreover, the project deliverables and project information will also be shared through UNIDO’s Open Data Platform.

Furthermore, information on project status, results and reports compiled within the project will be made publicly available on the project’s Website (PC1). Also, the NPC will attend conferences and workshops on the sustainable energy (RE and EE) and on energy nexus issues to create awareness on the project and disseminate the project results. All publications developed under this project will comply with GEF and UNIDO communication policies.

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 Consistency with National Priorities. Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.:

The proposed project is in line with the major national policies and programs on sustainable energy technologies and SME development in STP. Specifically, the project will actively contribute to the below listed main policies/strategies in place in STP through its policy, capacity and business promotion focused activities:

- **National Development Plan 2017-2021:** designed to operationalise the Transformation Agenda STP 2030 and the SDGs; replacing the Poverty Reduction Strategy Paper II. The GEF/UNIDO project will contribute towards the economic and social infrastructures and environmental priorities of the plan through the implementation of its project activities.
- **São Tomé and Príncipe - Nationally Determined Contribution (NDC) / Intended Nationally Determined Contribution (INDC):** STP NDC document states the importance of taking actions towards reducing climate change impacts in a vulnerable country like STP, which is a SIDS. The NDC states the country intention, in spite of the fact that STP is a natural carbon sink, to reduce carbon emission below the BAU (based on 2005 GHG inventory) by 2030 (57 ktCO₂eq). The GEF/UNIDO project will contribute directly to this as it aims, amongst other things, to support the development of sustainable energy (RE and EE) projects in the country, that will significantly reduce carbon emissions of the energy sector throughout their lifetime.

- **Transformation Agenda 2030 “São Tomé e Príncipe 2030: o País que queremos construir” (“STP 2030: the country we want to build”):** aims to promote sustainable development to which the GEF/UNIDO projects intends to contribute directly.
- **RJSE:** that defines the STP electricity sector. The GEF/UNIDO project will contribute to the development of plans and policies that will operationalised the aims and goals of the energy sector stated in RJSE as well as to the development of secondary legislation that will directly contribute to its implementation and regulation.
- **National Adaptation Programme of Action (NAPA, 2006)** which aims to increase the capacity of STP resilience to climate change and climate variability in order to achieve the development objectives set in its Growth and Poverty Reduction Strategy Paper. The GEF/UNIDO project will contribute directly towards this goal.
- **STP has ratified the United Nations Framework Convention on Climate Change (UNFCCC)** and is eligible to receive financial support for adaptation and mitigation interventions. The energy sector is considered as priority sector for GHG emission reductions. The up-scaling of RE and related technology transfer is an important climate change mitigation and adaptation measure, as well as a poverty reduction measure. The proposed GEF project will contribute to the targets and priority actions outlined in the Second National Communication to the UNFCCC (2012). In particular these reports outline that climate change will exacerbate already existing vulnerabilities (such as poor natural resource base, including serious water shortages and poor soil for agriculture on almost of the islands) and focus on RE and EE technologies will support both mitigation and adaptation efforts. The GEF/UNIDO project will support the development of RE and EE projects in STP.

C. DESCRIBE THE BUDGETED M & E PLAN:

Project M&E will be conducted in accordance with the established UNIDO and GEF procedures. The overall objective of the M&E process is to ensure successful and quality implementation of the project by means of:

- i) Tracking and reviewing project activities execution and actual accomplishments;
- ii) Providing visibility into progress as the project proceeds so that the implementation team can take early corrective action if performance deviates significantly from original plans;
- iii) Adjusting and updating project strategy and implementation plan to reflect possible changes on the ground, results achieved, and corrective actions taken.
- iv) Ensure linkages and harmonization of project activities with that of other related projects at national, regional and global levels.

According to the GEF and UNIDO M&E policies, follow-up studies like Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to: (i) make available studies, reports and other documentation related to the project; and (ii) facilitate interviews with staff involved in the project activities.

At the same time, M&E will comply with the rules and regulations governing the M&E procedures of UNIDO’s technical cooperation projects, in particular the UNIDO Evaluation Policy and the Guidelines for Technical Cooperation, both in their respective current versions.

A detailed monitoring plan for tracking and reporting on project time-bound milestones and accomplishments will be prepared by UNIDO in collaboration with the PMU and project partners at the beginning of project implementation and then periodically updated. By making reference to the impact and performance indicators defined in the Project Results Framework (PRF), the monitoring plan will track, report on and review project activities and accomplishments in relation to:

- a. Overall and specific socio-economic impacts and gender related aspects (such as gender balance of beneficiaries, budget spent on activities actively promoting GEEW).
- b. GHGs emission reductions directly and indirectly generated by the proposed project. These will include the type and the number of projects developed and implemented.

Project Kick off

A Project Inception Workshop (IW) will be held within the first 2 months after the project starts, involving those with assigned roles in the project organization structure. The IW is crucial to build ownership for the project results and to plan the first-year annual work plan. The IW has the following objectives:

- Assist all partners to fully understand and take ownership of the project objectives, outputs and activities. Detail the roles, support services and complementary responsibilities of local stakeholders in relation to the PMU.
- Ensure that all stakeholders are aware of the roles, functions and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The ToRs for project staff will be reviewed again as needed;
- Based on the Project Results Framework (PRF), finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification and revise assumptions and risks.
- Elaborate the M&E work plan, in accordance to the proposed budget, including a detailed overview of reporting, M&E requirements, as well as a gender analysis.
- Review financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule PSC meetings. Roles and responsibilities of all project organizational structures should be clarified, and meetings planned.

The first PSC meeting should be held within the first 12 months following the IW. An IW report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Key Performance Indicators (KPIs)

Monitoring and reporting procedures shall be established against/from Key Performance Indicators (KPIs) against which the project progress will be measured during quarterly, annual, mid-term and final reviews. These indicators are presented in Annex A: PRF, based on the Result Based Framework approach and the reporting requirements of the GEF Climate Change Tracking tool (CCTT). The completed GEF CCTT will be submitted at the design, mid-term and final project phases. During the inception phase, a gender analysis will be conducted. Monitoring and reporting will be done against the following sex disaggregated indicators:

- Number of stakeholders with increased awareness of sustainable energy principles
- Number of trained stakeholders in STP

Annual Project Review (APR)

These key reports aim to monitor progress made since project inception and in particular what has been accomplished since the previous reporting period. The APR includes, but is not limited to, reporting on the following:

- Progress made toward project objectives and outcomes, based on the indicators, baseline data and project completion goals (cumulative)
- Project outputs delivered per project outcomes (annual)
- Lesson learned/good practices
- Expenditure reports
- Risk and adaptive management
- Portfolio level indicators (i.e. GEF tracking tools) are also used by most focal areas on an annual basis

Mid-term Review (MTR) of project cycle

An internal assessment will be conducted by the PMU and the UNIDO's Project Manager halfway through the project implementation and taking into consideration UNIDO's guidelines. It will focus on the effectiveness, efficiency and timeliness of project implementation; it will highlight issues requiring decisions and actions; and will present initial lessons learned from project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term.

End of Project

An independent Final Evaluation will take place three months prior to the final PSC meeting in accordance with UNIDO and GEF guidance/guidelines. The Final Evaluation will focus on the delivery of the project results as initially planned. The final evaluation

focuses on the generated outcomes in correspondence with the initially planned (as corrected after the mid-term evaluation, if any correction took place). The final evaluation will analyse the impact and sustainability of results/outcomes, including the contribution to capacity development and the achievement of global environmental benefits/goals. The ToRs for this evaluation will be prepared by the UNIDO Project Manager based on guidance from the UNIDO evaluation group. The final review will also include the evaluation of the project as per the Core Indicators Worksheet and according to the [Updated Results Architecture For GEF-7](#).

According to the M&E policy of the GEF and UNIDO, follow-up studies such as Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to facilitate (i) access to studies, reports and other documentation related to the project and (ii) interviews with staff involved in the project activities.

The final evaluation should also provide recommendations for follow-up activities and require a management response. During the last quarter the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project results.

TABLE 11: COSTS OF M&E ACTIVITIES

Type of M&E Activity	Responsible Partner	Budget (USD)	Co-financing (USD)	Remarks	Timeframe
Inception Workshop (IW) and inception report	UNIDO Project Manager (PM); Project Management Unit (PMU)	5,000	0	It will be part of PMU activity	Within first two months of project start up
M&E design and tools to collect and record data (performance indicators) including a survey to confirm baseline values for technical capacities, gender, etc.	UNIDO PM, PMU and M&E and gender specialists as required	8,000	5,000		Within first two months of project start up and mid project
Regular monitoring and analysis of performance indicators (technical, social, environmental, gender)	UNIDO Project Manager (PM); PMU and M&E specialists as required	0	10,000	It will be part of PMU activity	Regularly to feed into project management and Annual Project Review
Project Implementation Reviews (PIRs)	PMU to prepare prior to the annual project review PM UNIDO to validate and finalize to submit to GEF	0	0	It will be part of PMU activity	Annually
Annual Project Review to assess project progress and performance	PMU, PM UNIDO HQ and Project Steering Committee to review the project performance and make corrective decision	5,000	10,000	It will be part of PMU activity	Annually prior to the finalization of APR/PIR and to the definition of annual work plans
Steering Committee (SC) Meeting	PMU, PM UNIDO HQ and PSC	5,000	5,000	It will be part of PMU activity	Annually to coincide with the Annual Project Review and ad hoc when urgent and important decisions need approval of SC
Mid-term review including survey to measure progress against baseline for investments, trainings and policy makers	UNIDO PM, UNIDO	15,000	30,000	It is part of UNIDO Implementation function	Mid of project
Project Terminal Evaluation	UNIDO Independent Evaluation Division (EVQ/IEV), PMU, PM UNIDO HQ and PSC, independent external evaluators	30,000	60,000	Indicative cost	Evaluation at least one month before the end of the project; report at the end of project implementation

Type of M&E Activity	Responsible Partner	Budget (USD)	Co-financing (USD)	Remarks	Timeframe
Lessons learned (in annual project review and PIRs, publication)	PMU, external consultants, UNIDO PM	N/A	9,000	It will be part of PMU activity	By the end of project implementation; annual as part of PIR
TOTAL indicative cost		68,000	129,000		

Legal context

It is expected that each set of activities to be implemented in the target countries will be governed by the provisions of the Standard Basic Cooperation Agreement concluded between the Government of the recipient country concerned and UNIDO or – in the absence of such an agreement – by one of the following: (i) the Standard Basic Assistance Agreement concluded between the recipient country and UNDP, (ii) the Technical Assistance Agreements concluded between the recipient country and the United Nations and specialized agencies, or (iii) the Basic Terms and Conditions Governing UNIDO Projects.”

PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)

A. GEF Agency(ies) certification

This request has been prepared in accordance with GEF policies³¹ and procedures and meets the GEF criteria for CEO endorsement under GEF-6.

Agency Coordinator, Agency Name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Mr. Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation, UNIDO-GEF Focal Point			Martin Lugmayr, Sustainable Energy Expert, Climate Policy and Partnership Division, Department of Energy, UNIDO	+43/(0)1 26026 3595	M.Lugmayr@unido.org

³¹ GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Development Impact (ultimate outcome)	Indicators	Baseline and targets	Means of verification	Risks and assumptions
<p><i>Enhanced GHG emission reduction and domestic value creation through the uptake of inclusive renewable energy and energy efficiency technology markets</i></p>	<p>Estimated incremental direct emissions reductions (in tCO₂e) over the life-time of facilitated RE&EE projects and measures calculated through the Climate Change Mitigation Tracking Tool;</p> <p>Estimated revenues from fossil fuel savings and sustainable energy sales (products and services) over the life-time of facilitated RE&EE projects and measures in USD</p> <p>Estimated number of primary and secondary jobs created over the life-time of facilitated RE&EE investments in key economic areas</p> <p>Mobilized investment in RE and EE projects and business ideas under implementation (in USD)</p> <p>MW of electric capacity of renewable energy investment projects in urban and rural areas developed to financial close and that commenced implementation</p> <p>Estimated MW of avoided electric generation capacity addition through peak load reduction by implementing standards for efficient appliances as well as other EE measures</p> <p>MWh/year of renewable energy generation and MWh/year of energy savings achieved through the facilitated investment projects and measures</p>	<p><u>Baseline:</u></p> <p>Although there have been some improvements in providing electricity to the population, in 2018, still a quarter of STP population remains without energy access although STP electrification rate in recent years has increased from 57.9% in 2012 to 74.5% in 2018;</p> <p>Frequent power cuts and extensive outages;</p> <p>Old transmission and distribution network poorly maintained (Technical and non-technical losses represent around 40% of electricity production in 2016);</p> <p>Increasing diesel-based decentralized systems to face lengthy blackouts;</p> <p>Dependence on fuel imports for thermal power grid-connected production (fossil fuel is responsible for more than 90% of the energy mix in 2016)</p> <p>Small share of RE in the grid-connected energy mix compared to the potential (5,5% hydropower energy from Contador plant). No concrete EE programs under consideration.</p> <p>STP total RE available capacity (grid connected and off-grid) is 5.16%.</p> <p>Increasing CO₂e emissions due to dependence on thermal fossil-fuel generation.</p> <p><u>Targets:</u></p> <p>Estimated 312,598 tCO₂e incremental direct GHG emissions reductions over the life-time of facilitated RE&EE projects and measures (tCO₂e)</p> <p>At least US\$ 6.5 Billion of estimated revenues from fossil fuel savings and sustainable energy sales (products and services) over the life-time of facilitated RE&EE projects and measures</p> <p>At least USD 8 million of investment in RE and EE projects and business ideas are mobilized</p>	<p>Project management reports</p> <p>Annual Project Implementation Reports (PIR)</p> <p>Workplan matrix and internal evaluation and monitoring reports</p> <p>Reports from investment project promoters</p> <p>Meeting Minutes of the NSEP</p> <p>Meeting Minutes of the PSC</p> <p>MIRNA communications and other official documents</p> <p>External evaluation report</p> <p>Climate change mitigation tracking tool records and calculations</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of interest of stakeholders in engaging in RE and EE project development</p> <p><u>Assumptions:</u></p> <p>STP Government Remains committed in the medium and long term to RE and EE</p> <p>Continued availability of funds from donor partners</p> <p>Continued interest of the stakeholders in engaging in RE and EE project development</p>

		<p>and under implementation</p> <p>Estimated 100 primary and secondary jobs created over the life-time of facilitated RE&EE investments in key economic areas</p> <p>At least 5 MW of additional RE capacity and avoided electricity capacity additions through peak demand reductions due to EE projects are identified, implemented and facilitated</p> <p>At least 14 000 MWh/year of expected renewable energy generation and energy savings achieved through the facilitated investment projects and measures</p>		
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PC1: Policy, legal and regulatory framework for sustainable energy

Outcomes:	Indicators	Baseline and Targets	Means of verification	Risks and Assumptions
<p><i>Outcome 1: Accelerated RE&EE market development through improved policy and regulatory framework and effective public-private coordination</i></p>	<p>Estimated % increase of the demand and supply of sustainable energy products and services in key economic sectors (e.g. power generation and distribution, construction, fisheries and agri-processing, tourism, transport, waste management and water and sanitation) following the introduction of policy changes (baseline 2017) by the end of the GEF project and 10-years post-project period</p> <p>% increase of turn-over of domestic sustainable energy product and service providers after the introduction of policies and incentives (baseline 2017)</p> <p>% increase of satisfaction of sustainable energy businesses with the adapted policy, regulatory and incentive framework after GEF project closure (baseline 2017);</p>	<p><u>Baseline:</u></p> <p>The policy and regulatory framework is insufficient to stimulate the uptake of demand and supply in key technology areas; low satisfaction of the private sector with the current policy, regulatory and incentive framework;</p> <p>Currently, the capacities of the Government to steer and coordinate the sustainable energy sector are limited. As there is no prioritisation from public side, international private sector actors with the intention to invest are not well coordinated.</p> <p><u>Targets:</u></p> <p>Estimated 20% increase of the demand and supply of sustainable energy products and services in key economic sectors (e.g. power generation and distribution, construction, fisheries and agro-processing, tourism, transport, waste management and water and sanitation) following the introduction of policy changes (baseline 2017) and by the GEF project end and a 10-years post-project period</p> <p>20% increase of turn-over of domestic sustainable energy product and service providers after the introduction of policies and incentives (baseline 2017) by the GEF project end and a 10-years post-project period</p> <p>30 % increase of satisfaction of sustainable energy businesses with the adapted policy, regulatory and incentive framework after GEF</p>	<p>Annual PIR</p> <p>Sustainable Energy Plans</p> <p>EE standards</p> <p>Package of incentives for RE</p> <p>MIRNA/DGRNE Website</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders towards sustainable energy and the project activities</p> <p>Economic, financial or political crisis may threaten the development of the GEF/UNIDO project activities and consequently the achievement of its outputs</p> <p><u>Assumptions:</u></p> <p>STP Government Remains committed in the medium and long term to RE and EE</p> <p>Sustained Government support to project activities</p> <p>Continued availability of funds and support from donor partners</p>

Outputs:	Indicators	Baseline and Targets	Means of verification	Risks and Assumptions
<p><i>Output 1.1: Coherent national sustainable energy policies with RE&EE targets established and under implementation</i></p>	<p>Number of NSEP and MIRNA/DGRNE Websites established and operational in STP</p> <p>Number of meetings conducted by the NSEP</p> <p>Number and percentage of women participating in the NSEP meetings</p> <p>Number of reports on the policy, legal and regulatory framework gaps and opportunities</p> <p>Number of legal and regulatory workshops carried out</p> <p>Number and percentage of women participating in the workshops</p> <p>Number of sustainable energy plans developed</p> <p>Number of Energy Sector Databases</p>	<p>project closure (baseline 2017);</p> <p><u>Baseline:</u></p> <p>There are no coherent RE&EE policies in place and established targets, if available, are not based on technical assessments. Moreover, there is a need to increase communication and cooperation amongst all stakeholders involved in the energy sector, including private sector ones.</p> <p>There is no Energy Sector Database in STP, and in fact, information on the energy sector is scarce and spread across the sectors. MIRNA/DGRNE has no website.</p> <p>There is no NEEAP and SEforAll AA developed for STP</p> <p><u>Targets:</u></p> <p>1 NSEP and 1 MIRNA/DGRNE Website created and operational</p> <p>8 meetings (2 meeting per year) of the NSEP conducted</p> <p>1 Report on Legal and Regulatory Framework Gaps and Opportunities is developed</p> <p>2 Sustainable Energy Plans are developed: the NEEAP and SEforAll AA.</p> <p>At least 4 workshops will be carried out on legal and regulatory issues (1 Gap Analysis and Recommendations Workshop; 1 Validation Workshop for the NEEAP and SEforAll AA, 1 Validation Workshop for the Incentive Package and EE standards; and 1 Workshop on the progress of the implementation of the NEEAP, SEforAll AA, incentive package, EE standards and Strategic Plan for the Development of RE in STP)</p> <p>Women are encouraged to participate in the NSEP and in the Workshops. At least 40% of the participants on the NSEP and on workshops should be women.</p> <p>1 Energy Sector Database is created and available for public consultation</p>	<p>Official communications from the Government on the creation of the NSEP</p> <p>MIRNA/DGRNE Website available online and continuously updated</p> <p>NSEP meeting minutes</p> <p>Workshop reports/proceedings</p> <p>News and other communication materials on the workshops</p> <p>Report on Legal and Regulatory Framework Gaps and Opportunities</p> <p>Sustainable Energy Plans</p> <p>Energy Sector Database</p> <p>Annual Project Implementation Reports (PIR)</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders for the creation and participation in the NSEP</p> <p>Economic, financial or political crisis may threaten the development of the GEF/UNIDO project activities and consequently the achievement of its outputs</p> <p>Lack of women in key positions to participate in the NSEP and in Workshops</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Sustained Government and stakeholders support to project activities</p> <p>Continued availability of funds and support from donor partners</p>

<p><i>Output 1.2: Proposals for sustainable energy legislation, standards and a package of incentives developed, and their implementation facilitated</i></p>	<p>Number of studies to identify priority changes in energy and non-energy legislation, standards and incentives</p> <p>Number of proposals for new legislation, standards and incentives developed</p> <p>Percentage % of the proposals that are adopted and commence implementation</p> <p>Number of qualification and certification standards for products and services in priority areas established and under implementation</p>	<p><u>Baseline:</u></p> <p>There is no mechanism to support the development of sustainable energy.</p> <p><u>Targets:</u></p> <p>1 study to identify priority changes in energy and non-energy legislation and incentives</p> <p>At least four (4) proposals for new legislation and incentives are developed</p> <p>At least 50% of the proposals are adopted and commence implementation</p> <p>At least two (2) standards for qualification and certification in priority technology areas are established and under implementation (e.g. PV, hydro, solar-thermal, EE in appliances);</p>	<p>Study Report</p> <p>Package of incentives and legislation for RE</p> <p>Workshop report/proceedings</p> <p>MIRNA/DGRNE Website</p> <p>News and other communication material on RE</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders in the development of the project activities</p> <p>Economic, financial or political crisis may threaten the development of the GEF/UNIDO project activities and consequently the achievement of its outputs</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Sustained Government and stakeholders support to project activities</p> <p>Continued availability of funds and support from donor partners</p>
<p><i>Output 1.3: EE standards for electric appliances are developed and their implementation facilitated</i></p>	<p>Number of baseline studies undertaken</p> <p>Number of EE standards developed</p> <p>Estimated avoided electric generation capacity addition through peak load reduction by implementing standards for efficient appliances over a period of ten (10) years</p>	<p><u>Baseline:</u></p> <p>There are no specific targets or standards for EE in place in STP. Currently, no other international partner is working on that.</p> <p><u>Targets:</u></p> <p>One baseline study on EE appliances undertaken</p> <p>At least one EE standard for appliances developed and its implementation facilitated</p> <p>Estimated 1 MW of avoided electric generation capacity addition through peak load reduction by implementing standards for efficient appliances over a period of ten (10) years</p>	<p>EE standards</p> <p>Workshop report/proceedings</p> <p>MIRNA/DGRNE Website</p> <p>News and other communication materials related to EE</p> <p>EMAE records on capacity additions, energy consumption, etc.</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders in the development of the project activities</p> <p>Economic, financial or political crisis may threaten the development of the GEF/UNIDO project activities and consequently the achievement of its outputs</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Sustained Government and stakeholders support to project activities</p> <p>Continued availability of funds and support from donor partners</p>
<p><i>Output 1.4: Strengthening STP and raising awareness to become a hub for sustainable energy</i></p>	<p>Number of conducted assessments and potential offers to host the Central African Centre for Renewable Energy and Energy Efficiency (CACREEE) in STP;</p> <p>Number of SEforAll campaigns to</p>	<p><u>Baseline:</u></p> <p>Internationally, the investment opportunities of STP are not well known. STP is not considered as a place to test sustainable energy island solutions.</p> <p>The efforts to increase tourism are not well</p>	<p>News and publications on the events/report/actions implemented</p> <p>Official communication</p> <p>List of attendees to the investment forums /</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders in the development of the project activities</p> <p>Economic, financial or political crisis</p>

<i>and island technology demonstration</i>	<p>increase international awareness on STP as interesting place to invest in sustainable energy (RE and EE)</p> <p>Number of investment workshops and international sustainable energy conferences and expos organized</p> <p>Number of requests to test sustainable energy island solutions in STP</p>	<p>coordinated with the sustainable energy efforts (e.g. eco-tourism).</p> <p>STP does not host any relevant international (energy) organisation.</p> <p><u>Targets:</u></p> <p>Assessment and potential offer to host the Central African Centre for Renewable Energy and Energy Efficiency (CACREEE) in STP;</p> <p>SEforALL campaign increases domestic and international awareness on STP as interesting place to invest in sustainable energy (to be organized in conjunction with activity 2.2.2)</p> <p>Investment workshop in Lisbon and international sustainable energy conference and expo organized (to be organized in conjunction with activity 2.2.2)</p> <p>At least two (2) requests to test sustainable energy island solutions in STP</p>	<p>investment forums proceedings</p> <p>Study on Potential and Options for STP to be the host for CACREEE</p>	<p>may threaten the development of the GEF/UNIDO project activities and consequently the achievement of its outputs</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>UNIDO and ECCAS remain committed in the implementation of CACREEE</p> <p>Sustained Government and stakeholders support to project activities</p> <p>Continued availability of funds and support from donor partners</p>
PC2: Sustainable energy investment promotion				
Outcomes:	Indicators	Baseline and Targets	Means of verification	Risks and assumptions
<i>Outcome 2: Increased investments in sustainable energy infrastructure and businesses</i>	<p>Mobilized investment in RE and EE projects and business ideas that commence implementation by the end of the GEF project duration (in USD)</p> <p>Estimated % increase of sustainable energy investments in projects and business ideas by the GEF project end and a 10-years post-project period (baseline 2017)</p>	<p><u>Baseline:</u></p> <p>Very low investments in RE&EE since many years. Investments were limited to small-scale solar home systems and bioenergy systems. RE penetration decreased over the years due to the lack of maintenance of hydro power stations. Moreover, domestic sustainable energy technology suppliers and service providers are nearly inexistent.</p> <p><u>Targets:</u></p> <p>At least USD 8 million of investment in RE and EE projects and business ideas are mobilized and commence implementation by the end of the GEF project duration</p> <p>Estimated % increase of sustainable energy investments in projects and business ideas by the GEF project end and a 10-years post-project period (baseline 2017)</p>	<p>NSEIP report</p> <p>Annual PIR</p> <p>Reports from investment project promoters</p> <p>Meeting Minutes of the PSC</p> <p>MIRNA communications and other official documents</p> <p>Project evaluation reports</p> <p>MIRNA/DGRNE Website</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of interest of stakeholders in engaging in RE and EE project development</p> <p><u>Assumptions:</u></p> <p>STP Government Remains committed in the medium and long term to RE and EE</p> <p>Continued availability of funds from donor partners</p> <p>Continued interest of the stakeholders in engaging in RE and EE project development</p> <p>Financial facility for sustainable energy projects created and operational through the GEF/UNIDO project lifetime</p>

Outputs:	Indicators	Baseline and Targets	Means of verification	Risks and assumptions
<p><i>Output 2.1. The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated</i></p>	<p>Number of STP RE and EE Status Reports developed and disseminated Number of GIS-based National RE Resource Maps developed and disseminated</p>	<p><u>Baseline:</u> There are no STP RE and EE Status Reports and GIS-based National RE Resource Map developed for STP. <u>Target:</u> One (1) STP RE and EE Status Report developed and disseminated One (1) technical GIS-based National RE Resource Map developed and disseminated</p>	<p>STP RE and EE Status Reports GIS-based National RE Resource Map MIRNA communications and other official documents MIRNA/DGRNE Website</p>	<p><u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Lack of interest of stakeholders in engaging in RE and EE project development <u>Assumptions:</u> STP Government remains committed in the medium and long term to RE and EE Continued availability of funds from donor partners Continued interest of the stakeholders in engaging in RE and EE project development</p>
<p><i>Output 2.2. A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums</i></p>	<p>Number of NSEIP developed Amount of investments in priority sustainable energy projects identified and promoted by the NSEIP (in USD) Number of investment forums carried out</p>	<p><u>Baseline:</u> There is no NSEIP in place in STP. So far, no investment forums on sustainable energy (RE/EE) have been organised. <u>Target:</u> One (1) NSEIP with an investment volume of at least US\$30 million developed and publicly available on the MIRNA/DGRNE website NSEIP presented to at least 50 financiers and investors in key events (in conjunction with output 1.4)</p>	<p>NSEIP report Annual PIR News and other communication materials related to the NSEIP and the investment forums MIRNA/DGRNE Website</p>	<p><u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Lack of interest of national and foreign stakeholders in engaging in RE and EE project development and investment forums <u>Assumptions:</u> STP Government remains committed in the medium and long term to RE and EE Continued availability of funds from donor partners Continued interest of national and international stakeholders in engaging in RE and EE project development and investment forums</p>
<p><i>Output 2.3. Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects</i></p>	<p>Installed capacity (in MW) of renewable energy investment projects in urban and rural areas developed to financial closure and their implementation facilitated. MWh/year of expected renewable energy generation and energy savings achieved through the facilitated investment projects</p>	<p><u>Baseline:</u> Currently there is only one grid-connected small hydro project in operation in STP (1.92 MW of installed capacity of which 1.5 MW is operational); the Contador hydropower plant. In rural areas there are either only diesel based mini-grids or solar home systems solutions. Around 40% of the generated electricity is lost through grid losses (technical and commercial)</p>	<p>Procurement documents and final offers of subcontractors Reports from investment project promoters Annual PIR Meeting Minutes of the PSC MIRNA communications and other official documents</p>	<p><u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Lack of interest of national and foreign stakeholders in engaging in RE and EE project development and investment forums <u>Assumptions:</u> STP Government remains committed</p>

	% of implemented renewable energy investment projects generating sufficient revenues to meet the operational expenses and financial obligations	and there are no projects in place to reduce them. There is an opportunity to reduce peak demand through the development of EE projects and implementation of behavioural-change actions. <u>Target:</u> Renewable energy investment projects in urban and rural areas with a capacity of 5 MW or more are developed to financial closure and their implementation is facilitated. At least 14 000 MWh/year of expected renewable energy generation and energy savings achieved through the facilitated investment projects	News and other communication materials related to sustainable energy investment projects MIRNA/DGRNE Website EMAE records and reports	in the medium and long term to RE and EE Continued availability of funds from donor partners Continued interest of national and international stakeholders in engaging in RE and EE project development and investment forums
<i>Output 2.4. Based on existing instruments, a Financing Facility is established and supports priority sustainable energy projects and business ideas</i>	Number of Sustainable Energy Financial Facilities in place in STP (STP-SEFF) Number of calls for proposals of the STP-SEFF Number of sustainable energy investment projects or business ideas that receive support from the STP-SEFF.	<u>Baseline:</u> There are no financial mechanisms or dedicated financial schemes in place in STP for sustainable energy project development, investment and entrepreneurship. Due to the limited market and the lack of support for SMEs, there are hardly domestic businesses operating in the sustainable energy sector. <u>Target:</u> One (1) STP-SEFF is established and operation in STP At least two (2) calls for proposals are carried out by the STP-SEFF At least five (5) sustainable energy investment projects or business ideas receive support from the STP-SEFF.	Application guidelines for the STP SEFF call for proposal(s) Evaluation results of the submitted projects Project documents and reports News and other communication materials related to STP SEFF Annual Project Implementation Reports (PIR) MIRNA/DGRNE Website	<u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Lack of interest of national and foreign stakeholders in engaging in RE and EE project development and investment forums <u>Assumptions:</u> STP Government remains committed in the medium and long term to RE and EE and to implement the STP-SEFF Continued availability of funds from donor partners Continued interest of national and international stakeholders in engaging in RE and EE project development and investment forums
PC3: Qualification and certification framework for sustainable energy				
Outcomes:	Indicators	Baseline and Targets	Means of verification	Risks and assumptions

<p><i>Outcome 3: Enhanced domestic public and private sector capacities to plan, implement, operate and innovate sustainable energy products and services in island contexts</i></p>	<p>% increase of qualified (and % of certified) domestic experts working in the national sustainable energy sector in line with established standards (with indication of female % percentage)</p> <p>% increase of qualified (and % of certified) experts working in relevant energy institutions (with indication of female % percentage) in line with established standards</p> <p>% increase of qualified (and % of certified) experts working in public or private R&D activities (with indication of female % percentage) in line with established standards</p> <p>% increase in the use of domestic contractors and services throughout the value chain of RE&EE investments</p>	<p><u>Baseline:</u></p> <p>Limited capacity of key stakeholders (e.g. project developers, policy makers, utility, finance institutions, academia)</p> <p>No training programs on the planning, installation, operation and maintenance of RE systems tailored to practitioners needs</p> <p>No certified domestic experts in STP working in the national sustainable energy sector and or relevant energy institutions.</p> <p>No qualification, certification and accreditation standards for RE&EE products and services</p> <p>Low involvement of the domestic private sector in sustainable energy activities (mainly imported)</p> <p><u>Target:</u></p> <p>20% increase of qualified (ideally certified) domestic experts working in the national sustainable energy sector (40% female envisaged)</p> <p>20% increase of qualified (ideally certified) experts working in relevant energy institutions (40% female envisaged)</p> <p>10% increase of qualified (ideally certified) experts working in public or private R&D activities (40% female envisaged)</p> <p>20% increase in the use of domestic contractors, services and content throughout the value chain of RE&EE investments</p>	<p>Annual PIR</p> <p>Meeting Minutes of the PSC</p> <p>MIRNA communications and other official documents</p> <p>Project evaluation reports</p> <p>Attendance list of training workshops</p> <p>Workshops and training courses evaluation sheets completed by participants</p> <p>MIRNA/DGRNE website</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of interest of stakeholders in engaging in sustainable energy capacity building and certification activities</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Continued availability of funds from donor partners</p> <p>Continued interest of the stakeholders in engaging in sustainable energy capacity building and certification activities</p>
Outputs:	Indicators	Baseline and Targets	Means of verification	Risks and assumptions
<p><i>Output 3.1. Improved qualification, certification and accreditation framework on sustainable energy</i></p>	<p>Needs assessment conducted to identify priority qualification, certification and accreditation gaps to be addressed for products and services</p> <p>Monitoring plan and implementation methodology established (considering gender disaggregated objectives);</p> <p>Implemented Qualification, Certification and Accreditation Frameworks on Sustainable Energy</p>	<p><u>Baseline:</u></p> <p>In STP there are no qualification, certification and accreditation framework and standards for sustainable energy products and services established.</p> <p>Currently, no organisation offers certified trainings in technology areas with growth potential (e.g. PV, hydro, solar-thermal, EE in appliances);</p> <p><u>Target:</u></p> <p>Needs assessment to identify priority qualification, certification and accreditation</p>	<p>Capacity needs assessment report</p> <p>Qualification, certification and accreditation framework on sustainable energy developed</p> <p>Approach and monitoring methodology developed for meeting gender disaggregated objectives of the qualification, certification and accreditation framework</p> <p>Annual PIR</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of interest of stakeholders in engaging in sustainable energy capacity building and certification activities</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed</p>

		gaps to be addressed for products and services; Monitoring plan and implementation methodology established (considering gender disaggregated objectives); At least one (1) Qualification, Certification and Accreditation Framework on Sustainable Energy is implemented	Meeting Minutes of the PSC MIRNA communications and other official documents Project evaluation reports	in the medium and long term to RE and EE Continued availability of funds from donor partners Continued interest of the stakeholders in engaging in sustainable energy capacity building and certification activities
<i>Output 3.2. Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas</i>	Training needs assessment for MIRNA/DGRNE, EMAE, AGER and other authorities undertaken Number of institutions and % respective staff trained in RE priority areas (e.g. hydro power, grid-connected PV) Number of institutions and % of staff trained on EE priority areas (e.g. monitoring and verification of standards for appliances) Number of gender-awareness trainings for MIRNA/DGRNE, EMAE, AGER.	<u>Baseline:</u> There are no special training programmes on on-grid/off-grid RE systems and to enforce, monitor, and verify standards on efficient electric appliances. There is urgent need for increased knowledge in growth areas such as hydro, PV and solar-thermal; <u>Target:</u> At least one training needs assessment for MIRNA/DGRNE, EMAE, AGER and other authorities undertaken At least 20% of MIRNA/DGRNE, EMAE, AGER staff is trained on RE priority areas trained (e.g. hydro power, grid-connected PV) At least 20% of MIRNA/DGRNE, EMAE, AGER staff on EE priority areas trained (e.g. monitoring of standards for appliances) At least one (1) gender-awareness trainings for MIRNA/DGRNE, EMAE, AGER.	Annual PIR Meeting Minutes of the PSC MIRNA communications and other official documents Project evaluation reports Training sessions registries and records (including evaluation of participants)	<u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements Lack of interest of stakeholders in engaging in the special training programme <u>Assumptions:</u> STP Government remains committed in the medium and long term to RE and EE Continued availability of funds from donor partners Continued interest of the stakeholders in in the special training programme
<i>Output 3.3. On-line training program on sustainable energy solutions for islands is developed in Portuguese and applied by capacity building institutions and experts in São Tomé and Príncipe, Cabo Verde and Guinea-Bissau</i>	Number of on-line training programmes developed and under implementation Number of institutions including the tool in the curricula Number of participants undertaking the online training programme % of women attending the online training course Number of Best Practice Guides for the development of Sustainable Energy Solutions in Islands available in Portuguese	<u>Baseline:</u> There is no online training programme on sustainable energy solutions for islands in Portuguese available. There is no Best Practice Guide for the development of Sustainable Energy Solutions in Islands available in Portuguese. <u>Target:</u> At least one (1) online training programme on sustainable energy solutions for islands in Portuguese is developed and under implementation At least five (5) training institutions or trainers include the tool in the curricula At least one (1) Best Practice Guide for the development of Sustainable Energy Solutions in Islands is developed in Portuguese	Annual PIR Meeting Minutes of the PSC Project evaluation reports Training sessions registries and records (including evaluation of participants) Best Practice Guide for the development of Sustainable Energy Solutions in Islands MIRNA/DGRNE Website	<u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements Lack of interest of stakeholders in engaging in the on-line training programme <u>Assumptions:</u> STP Government remains committed in the medium and long term to RE and EE Continued availability of funds from donor partners Continued interest of the stakeholders in the on-line training programme

		<p>At least 75 participants participate in the online training programme</p> <p>At least 40% of the target stakeholders are women</p>		
<p><i>Output 3.4: Capacity support is provided for the operationalization of the National RE Associations</i></p>	<p>Business plan for the national RE associations;</p> <p>Number of registered members of the associations;</p> <p>Percentage of the administrative and operational costs of the associations covered by the generated revenues by end of the GEF project duration;</p>	<p><u>Baseline:</u></p> <p>There is a need for the National RE Associations to build their capacities on the field and on their activities.</p> <p><u>Target:</u></p> <p>One (1) Business plan for the national RE associations;</p> <p>At least 15 registered members in each of the associations after five (5) years of operation;</p> <p>Revenues cover 100% the administrative and operational costs of the associations by end of the GEF project duration</p>	<p>Training sessions registries and records (including evaluation of participants)</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of interest of the National RE Association to have its capacity built and support on the implementation of its activities</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Continued availability of funds from donor partners</p> <p>Continued interest of the National RE Association to participate on capacity building training programme and to receive support in the implementation of its activities</p> <p>Continued interest and engagement from ALER in the implementation of this output</p>
<p><i>Output 3.5. At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on RE and EE issues</i></p>	<p>Number of trained institutions</p> <p>Number of certified trainers participating in training workshops</p>	<p><u>Baseline:</u></p> <p>There is no train-the-trainer programme on sustainable energy solutions in place in STP.</p> <p>No certified domestic experts in STP working in the national sustainable energy sector and or relevant energy institutions</p> <p><u>Target:</u></p> <p>One Train-the-trainers programme developed and implemented at CERMI facility</p> <p>At least five (5) capacity building institutions are trained</p> <p>At least fifteen (15) certified trainers are trained</p>	<p>Annual Project Implementation Reports (PIR)</p> <p>Meeting Minutes of the PSC</p> <p>Project evaluation reports</p> <p>Training sessions registries and records (including evaluation of participants)</p> <p>MIRNA/DGRNE Website</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of interest of stakeholders in engaging in the Train-the-trainers programme</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Continued availability of funds from donor partners</p>

				Continued interest of the stakeholders in engaging in the Train-the-trainers programme
<i>Output 3.6. Improved capacities of key stakeholders through national and sub-regional trainings, by train-the-trainer approaches and training missions</i>	<p>Number of key stakeholders trained on sustainable energy issues by qualified trainers</p> <p>Number of domestic sustainable energy companies and start-ups that receive business training;</p> <p>% of women participating in the training sessions</p>	<p><u>Baseline:</u></p> <p>Limited capacity of key stakeholders (e.g. project developers, policy makers, utility, finance institutions, academia, businessmen or businesswomen, professionals, etc.)</p> <p><u>Target:</u></p> <p>At least one hundred (100) key stakeholders are trained on sustainable energy issues by qualified trainers</p> <p>At least thirty (30) domestic sustainable energy companies and start-ups receive business training;</p> <p>At least 40% of the trained stakeholders are women</p>	<p>Annual PIR</p> <p>Meeting Minutes of the PSC</p> <p>Project evaluation reports</p> <p>Training sessions registries and records (including evaluation of participants)</p> <p>MIRNA/DGRNE Website</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of interest of stakeholders on being trained on sustainable energy solutions</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Continued availability of funds from donor partners</p> <p>Continued interest of the stakeholders on being trained on sustainable energy solutions</p>
PC4: Project monitoring and evaluation				
Outcomes:	Indicators	Baseline and Targets	Means of verification	Risks and assumptions
<i>Outcome 4: Continuous monitoring and evaluation (M&E) of the implementation of the GEF project conducted in accordance with established GEF and UNIDO procedures and guidelines</i>	<p>Number of project activities implemented according to work plan</p> <p>Number of expected results achieved</p> <p>Number of M&E methodologies and plan developed and implemented</p>	<p><u>Baseline:</u></p> <p>The project is developed in a challenging context.</p> <p>There is a need to continuously track progress of project implementation, to ensure that the project is on track and achieves its final results.</p> <p><u>Target:</u></p> <p>One (1) M&E methodology and plan is established and used throughout the project implementation</p> <p>At least 4 Annual Project Implementation Reports are compiled and delivered to UNIDO's project manager during the course of the project by the PMU</p> <p>At least 60% of the activities are implemented according to the Workplan at the mid of the project</p>	<p>Annual PIR</p> <p>Meeting Minutes of the PSC</p> <p>Project evaluation reports and internal audits reports</p> <p>MIRNA/DGRNE website</p>	<p><u>Risks:</u></p> <p>Lack of ownership and commitment from the Government and stakeholders</p> <p>Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements</p> <p>Lack of a qualified management team with a proactive approach</p> <p><u>Assumptions:</u></p> <p>STP Government remains committed in the medium and long term to RE and EE</p> <p>Continued availability of funds from donor partners</p> <p>Qualified management team with a proactive approach</p>

		100% of the expected results are achieved at the end of the project		
Outputs:	Indicators	Baseline and Targets	Means of verification	Risks and assumptions
<i>Output 4.1. Mid-term review and terminal evaluation executed</i>	Number of project's mid-term reviews and terminal evaluations executed Number of project activities implemented according to work plan Number of expected results achieved	<u>Baseline:</u> There is a need to track progress of project implementation to ensure that the project is on-track to meet its main outcomes and outputs. There is a need to evaluate at the end if the project was successful in yielding the expected results and impacts <u>Target:</u> At least 60% of the activities are implemented according to the Workplan at the mid of the project 100% of the expected main results are achieved at the end of the project;	Project mid-term review and terminal evaluation reports	<u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements Lack of a qualified management team with a proactive approach <u>Assumptions:</u> STP Government remains committed in the medium and long term to RE and EE Continued availability of funds from donor partners Qualified management team with a proactive approach
<i>Output 4.2. Project's progress monitored, documented and recommended actions formulated</i>	Number of M&E methodologies and plan developed and implemented	<u>Baseline:</u> There is a need to track progress of project implementation to ensure that the project is on-track to meet its main outcomes and outputs. There is a need to evaluate at the end if the project was successful in yielding the expected results and impacts <u>Target:</u> One (1) M&E methodology and plan is established and used throughout the project implementation At least 4 Annual Project Implementation Reports are compiled and delivered to UNIDO's project manager during the course of the project by the PMU	Annual PIR Meeting Minutes of the PSC Project evaluation reports and internal audits reports MIRNA/DGRNE website	<u>Risks:</u> Lack of ownership and commitment from the Government and stakeholders Economic, financial or political crisis may threaten the sustainability of the GEF/UNIDO project achievements Lack of a qualified management team with a proactive approach <u>Assumptions:</u> STP Government remains committed in the medium and long term to RE and EE Continued availability of funds from donor partners Qualified management team with a proactive approach

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

N/A

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS³²

A. Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: \$ 50,000			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
Data collection and energy baseline report (incl. hydro and gender assessment) and stakeholders' consultations	20,000	20,000	
Identification and evaluation of the feasibility and viability of demonstration/investment projects	8,000	8,000	
Project strategy and implementation modalities and co-financing mobilization	7,000	7,000	
Development of environmental and social management plan (ESMP) document	5,000	5,000	
Finalization and submission of CEO Endorsement Request incl. all annexes	10,000	9,979	
Total	50,000	49,979	0

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF Trust Funds or to your Agency (and/or revolving fund that will be set up)

No reflows;

Annex E: GEF 7 Core Indicator Worksheet

Use this Worksheet to compute those indicator values as required in Part I, Table E to the extent applicable to your proposed project. Progress in programming against these targets for the program will be aggregated and reported at any time during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Name of the file: "Annex_E_GEF7_Core_Indicators_Worksheet.docx"

Annex F: GEF Project Taxonomy Worksheet

³² If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.

Use this Worksheet to list down the taxonomic information required under Part I, item F by ticking the most relevant keywords/ topics/themes that best describe this project.

Name of the file: "Annex_F_GEF_6_Taxonomy.docx"

Annex G: GEF Budget Allocation

Project Components	Financing Type (TA, Inv...)	Expected Outcomes	Expected Outputs	UNIDO Budget Lines		GEF Financing	Co-Financing	Total	
				Code	Description	\$000	\$000	\$000	
						a	b	c=a+ b	
Project Component 1 (PC1): Policy, legal and regulatory framework for sustainable energy	TA	1: Accelerated RE&EE market development through improved policy and regulatory framework and effective public-private coordination	Output 1.1. Coherent national sustainable energy policies with RE&EE targets established and under implementation	11	Int'l consultant	\$ 60.00	\$ -	\$ 60.00	
				17	Nat consultant	\$ 12.50	\$ -	\$ 12.50	
				30	Meetings/workshops	\$ -	\$ 39.92	\$ 39.92	
				51	Sundries	\$ 15.00	\$ 21.00	\$ 36.00	
				21	Subcontract	\$ -	\$ 140.00	\$ 140.00	
				Sub-Total 1.1.			\$ 87.50	\$ 200.92	\$ 288.42
			Output 1.2. Proposals for sustainable energy legislation, standards and a package of incentives developed, and their implementation facilitated	11	Int'l consultant	\$ 75.00	\$ -	\$ 75.00	
				17	Nat consultant	\$ 12.50	\$ -	\$ 12.50	
				21	Subcontract	\$ 40.00	\$ -	\$ 40.00	
				Sub-Total 1.2.			\$ 127.50	\$ -	\$ 127.50
			Output 1.3. EE standards for electric appliances are developed and their implementation facilitated	11	Int'l consultant	\$ -	\$ 90.00	\$ 90.00	
				17	Nat consultant	\$ 15.00	\$ -	\$ 15.00	
				Sub-Total 1.3.			\$ 15.00	\$ 90.00	\$ 105.00

			Output 1.4. Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration	51	Sundries	\$ 40.00	\$ 20.00	\$ 60.00
			Sub-Total 1.4.			\$ 40.00	\$ 20.00	\$ 60.00
			Sub-total PC1.			\$ 270.00	\$ 310.92	\$ 580.92
						17.14%	1.33%	2.33%
Project Component 2 (PC2): Sustainable energy investment promotion	TA	2. Increased investments in sustainable energy infrastructure and businesses	Output 2.1: The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated	11	Int'l consultant	\$ 60.00	\$ -	\$ 60.00
				17	Nat consultant	\$ 10.00	\$ -	\$ 10.00
				21	Subcontract	\$ -	\$ 43.50	\$ 43.50
					Sub-Total 2.1.	\$ 70.00	\$ 43.50	\$ 113.50
			Output 2.2: A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums	11	Int'l consultant	\$ 45.00	\$ -	\$ 45.00
				21	Subcontract	\$ 7.50	\$ -	\$ 7.50
				30	Workshops/ Forums	\$ 20.00	\$ -	\$ 20.00
		Sub-Total 2.2.	\$ 72.50	\$ -	\$ 72.50			
	Inv	2. Increased investments in sustainable energy infrastructure and businesses	Output 2.3: Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects	11	Int'l consultant	\$ -	\$ 75.00	\$ 75.00
				17	Nat consultant	\$ -	\$ 20.00	\$ 20.00
				21	Subcontract	\$ 623.29	\$ 19,088	\$ 19,710.89
				Sub-Total 2.3.	\$ 623.29	\$ 19,183	\$ 19,805.89	
			Output 2.4: Based on existing instruments, a Financing Facility is established and supports	11	Int'l consultant	\$ 15.00	\$ -	\$ 15.00
				17	Nat consultant	\$ -	\$ 30.00	\$ 30.00

			priority sustainable energy projects and business ideas	21	Subcontract	\$ 100.71	\$ 3,068.56	\$ 3,169.28
			Sub-Total 2.4.			\$ 115.71	\$ 3,098.56	\$ 3,214.28
			Sub-total PC2.			\$ 881.50	\$22,324.66	\$ 23,206.16
						55.95%	95.60%	93.09%
Project Component 3 (PC3): Qualification and certification framework for sustainable energy	TA	3. Enhanced domestic public and private sector capacities to plan, implement, operate and innovate sustainable energy products and services in island contexts	Output 3.1. Improved qualification, certification and accreditation framework on sustainable energy	11	Int'l consultant	\$ 10.00	\$ 65.00	\$ 75.00
			Sub-Total 3.1.			\$ 10.00	\$ 65.00	\$ 75.00
			Output 3.2: Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas	11	Int'l consultant	\$ 10.00	\$ 35.00	\$ 45.00
				17	Nat consultant	\$ 10.00	\$ -	\$ 10.00
				30	Workshops/ Forums	\$ 31.00	\$ 2.60	\$ 33.60
			Sub-Total 3.2.			\$ 51.00	\$ 37.60	\$ 88.60
			Output 3.3: On-line training program on sustainable energy solutions for island is developed in Portuguese and applied by capacity building institutions and experts in Sao Tome and Principe, Cabo Verde and Guinea-Bissau	21	Subcontract	\$ -	\$ 100.00	\$ 100.00
			Sub-Total 3.3.			\$ -	\$ 100.00	\$ 100.00
			Output 3.4. Capacity support is provided for the operationalization of the National RE Associations	21	Subcontract	\$ 15.60	\$ 50.30	\$ 65.90
			Sub-Total 3.4.			\$ 15.60	\$ 50.30	\$ 65.90
Output 3.5: At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on renewable energy and energy efficiency issues	21	Subcontract	\$ 68.81	\$ 49.79	\$ 118.60			

			Sub-Total 3.5.			\$ 68.81	\$ 49.79	\$ 118.60
			Output 3.6: Improved capacities of key stakeholders through national and sub-regional trainings, by train-the trainer approaches and training missions	17	Nat consultant	\$ 10.00	\$ -	\$ 10.00
				30	Workshops/ Training	\$ 60.00	\$ 8.84	\$ 68.84
			Sub-Total 3.6.			\$ 70.00	\$ 8.84	\$ 78.84
			Sub-total PC3.			\$ 215.41	\$ 311.53	\$ 526.94
						13.67%	1.33%	2.11%
4 Monitoring and Evaluation	TA	4.Project's progress towards objectives continuously monitored and evaluated	Output 4.1. Mid-term review and terminal evaluation executed	11	Int'l consultant	\$ 45.00	\$ 45.00	\$ 90,00
			Sub-Total 4.1.			\$ 45.00	\$ 45.00	\$ 90,00
			Output 4.2. Project's progress monitored, documented and recommended actions formulated	30	Workshops/ Meetings	\$ -	\$ 4.00	\$ 4,00
				51	Sundries	\$ 23,00	\$ 80.00	\$ 103,00
			Sub-Total 4.2.			\$ 23,00	\$ 84.00	\$ 107,00
			Sub-total PC4.			\$ 68,00	\$ 129.00	\$ 197,00
						4,32%	0.55%	0,79%
Sub-totals all components 1+2+3+4						\$ 1,434,91	\$23,076.11	\$ 24,511,02
Project Management Cost (PMC)						\$ 140,66	\$ 275.88	\$ 416,54
TOTAL PROJECT COST						\$ 1,575,57	\$23,351.99	\$ 24,927,56

ANNEX H: ANNUAL ALLOCATION

Output Based Tentative Budget for the GEF Grant

Output Based Tentative Budget for the GEF Grant (should follow the SAP PS layout and structure for easy synchronization)												
GEF Grant Budget Component 1												
Project Component 1 (PC1): Policy, legal and regulatory framework for sustainable energy	Type of Expense	Yr 1		Yr 2		Yr 3		Yr 4		Output Total		Envisaged Execution Modality to be discussed in detail in the kick-off meeting
		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	
<i>Output 1.1. Coherent national sustainable energy policies with RE&EE targets established and under implementation</i>	International Expertise	11%	30,000	11%	30,000					22%	60,000	Part of an execution agreement with MIRNA/DGRNE combined with UNIDO Technical Execution Support
	Local Travel	0%		0%						0%	0	
	National Expertise	2%	6,250	2%	6,250					5%	12,500	
	Training/Workshops	0%		0%						0%	0	
	Equipment	0%		0%						0%	0	
	Miscellaneous (website)	3%	7,500	3%	7,500					6%	15,000	
	Output sub-total		16%	43,750	16%	43,750	0	0	0	0	32%	
<i>Output 1.2. Proposals for sustainable energy legislation, standards and a package of incentives developed, and their implementation facilitated</i>	International Expertise	14%	37,500	14%	37,500					28%	75,000	Part of execution agreement with MIRNA/DGRNE combined with UNIDO Technical Execution Support
	Local Travel	0%		0%						0%	0	
	National Expertise	2%	6,250	2%	6,250					5%	12,500	
	Training/Workshops	0%		0%						0%	0	
	Equipment	0%		0%						0%	0	
	Miscellaneous	7%	20,000	7%	20,000					15%	40,000	
	Output sub-total		24%	63,750	24%	63,750	0	0	0	0	47%	
<i>Output 1.3. EE</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution

<i>standards for electric appliances are developed and their implementation facilitated</i>	International Expertise	0%		0%						0%	0	agreement with MIRNA/DGRNE combined with UNIDO Technical Execution Support
	Local Travel	0%		0%						0%	0	
	National Expertise	4%	10,000	2%	5,000					6%	15,000	
	Training/Workshops	0%		0%						0%	0	
	Equipment	0%		0%						0%	0	
	Miscellaneous	0%		0%						0%	0	
	Output sub-total	4%	10,000	2%	5,000	0	0	0	0	6%	15,000	
<i>Output 1.4. Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	UNIDO Technical Execution Support and part of execution agreements with SIDS DOCK and ALER
	International Expertise	0%		0%		0%		0%		0%	0	
	Local Travel	0%		0%		0%		0%		0%	0	
	National Expertise	0%		0%		0%		0%		0%	0	
	Training/Workshops	0%		0%		0%		0%		0%	0	
	Equipment	0%		0%		0%		0%		0%	0	
	Miscellaneous	4%	10,000	4%	10,000	4%	10,000	4%	10,000	15%	40,000	
Output sub-total	4%	10,000	4%	10,000	4%	10,000	4%	10,000	15%	40,000		
TOTAL Component 1		47%	127,500	45%	122,500	4%	10,000	4%	10,000	100%	270,000	
GEF Grant Budget Component 2												
Project Component 2 (PC2): Sustainable energy investment promotion	Type of Expense	Yr 1		Yr 2		Yr 3		Yr 4		Output Total		Envisaged Execution Modality to be discussed in detail in the kick-off meeting
<i>Output 2.1: The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with MIRNA/DGRNE and ALER combined with UNIDO Technical Execution Support
	International Expertise	7%	60,000							7%	60,000	
	Local Travel	0%								0%	0	
	National Expertise	1%	10,000							1%	10,000	
	Training/Workshops	0%								0%	0	
	Equipment	0%								0%	0	
	Miscellaneous	0%								0%	0	
Output sub-total	8%	70,000	0	0	0	0	0	0	0	8%	70,000	

<i>Output 2.2: A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	UNIDO Technical Execution Support and part of execution agreements with MIRNA/DGRNE and ALER	
	International Expertise	5%	45,000							5%	45,000		
	Local Travel	0%								0%	0		
	National Expertise	1%	7,500							1%	7,500		
	Training/Workshops	2%	20,000							2%	20,000		
	Equipment	0%								0%	0		
	Miscellaneous	0%								0%	0		
Output sub-total	8%	72,500	0	0	0	0	0	0	0	8%	72,500		
<i>Output 2.3: Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with MIRNA/DGRNE, ECREEE, project promoters providing co-finance (e.g. EDP) combined with UNIDO Technical Execution Support	
	International Expertise	0%		0%						0%	0		
	Local Travel	0%		0%						0%	0		
	National Expertise	0%		0%						0%	0		
	Training/Workshops	0%		0%						0%	0		
	Equipment	0%		0%						0%	0		
	Miscellaneous (investment projects)	35%	311,643	35%	311,643					71%	623,287		
Output sub-total	35%	311,643	35%	311,643	0	0	0	0	0	71%	623,287		
<i>Output 2.4: Based on existing instruments, a Financing Facility is established and supports priority sustainable energy projects and business ideas</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with MIRNA/DGRNE, ECREEE, project promoters providing co-finance (e.g. EDP) combined with UNIDO Technical Execution Support	
	International Expertise			1%	5,000	1%	5,000	1%	5,000	2%	15,000		
	Local Travel			0%		0%		0%		0%	0		
	National Expertise			0%		0%		0%		0%	0		
	Training/Workshops			0%		0%		0%		0%	0		
	Equipment			0%		0%		0%		0%	0		
	Miscellaneous (Financial Mechanism)			4%	33,571	4%	33,571	4%	33,571	11%	100,713		
Output sub-total	0%	0	4%	38,571	4%	38,571	4%	38,571	4%	38,571	13%	115,713	
TOTAL Component 2	52%	454,143	40%	350,214	4%	38,571	4%	38,571	4%	38,571	100%	881,500	
GEF Grant Budget Component 3													
Project Component 3 (PC3): Qualification and certification framework for sustainable energy	Type of Expense	Yr 1	Yr 2	Yr 3	Yr 4	Output Total						Envisaged Execution Modality to be discussed in detail in the kick-off meeting	

<i>Output 3.1. Improved qualification, certification and accreditation framework on sustainable energy</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with CERMI and MIRNA/DGRNE combined with UNIDO Technical Execution Support
	International Expertise	3%	6,667	2%	3,333					5%	10,000	
	Local Travel	0%		0%						0%	0	
	National Expertise	0%		0%						0%	0	
	Training/Workshops	0%		0%						0%	0	
	Equipment	0%		0%						0%	0	
	Miscellaneous	0%		0%						0%	0	
Output sub-total	3%	6,667	2%	3,333	0	0	0	0	0	5%	10,000	
<i>Output 3.2: Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with CERMI and MIRNA/DGRNE combined with UNIDO Technical Execution Support
	International Expertise	0%		5%	10,000	0%		0%		5%	10,000	
	Local Travel	0%		0%		0%		0%		0%	0	
	National Expertise	0%		0%		5%	10,000	0%		5%	10,000	
	Training/Workshops	0%		7%	15,500	7%	15,500	0%		14%	31,000	
	Equipment	0%		0%		0%		0%		0%	0	
	Miscellaneous	0%		0%		0%		0%		0%	0	
Output sub-total	0	0	12%	25,500	12%	25,500	0	0	24%	51,000		
<i>Output 3.3: On-line training program on sustainable energy solutions for islands is developed in Portuguese and applied by capacity building institutions and experts in Sao Tome and Principe, Cabo Verde and Guinea-Bissau</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with CERMI and ECREEE combined with UNIDO Technical Execution Support
	International Expertise									0%	0	
	Local Travel									0%	0	
	National Expertise									0%	0	
	Training/Workshops									0%	0	
	Equipment									0%	0	
	Miscellaneous									0%	0	
Output sub-total	0	0	0	0	0	0	0	0	0	0%	0	
<i>Output 3.4. Capacity support is provided for the operationalization of the National RE Associations</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreement with ALER
	International Expertise			0%						0%	0	
	Local Travel			0%						0%	0	
	Training/Workshops			7%	15,600					7%	15,600	

	Equipment			0%						0%	0	
	Miscellaneous			0%						0%	0	
	Output sub-total	0	0	7%	15,600	0	0	0	0	7%	15,600	
<i>Output 3.5: At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on renewable energy and energy efficiency issues</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with CERMI, MIRNA/DGRNE, ALER and int. capacity building institutes (e.g. AEE-Intec for solar thermal) combined with UNIDO Technical Execution Support
	International Expertise	0%		0%						0%	0	
	Local Travel	0%		0%						0%	0	
	National Expertise	0%		0%						0%	0	
	Training/Workshops	16%	34,405	16%	34,405					32%	68,810	
	Equipment	0%		0%						0%	0	
	Miscellaneous	0%		0%						0%	0	
	Output sub-total	16%	34,405	16%	34,405	0	0	0	0	32%	68,810	
<i>Output 3.6: Improved capacities of key stakeholders through national and sub-regional trainings, by train-the trainer approaches and training missions</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreements with CERMI, MIRNA/DGRNE, ALER and int. capacity building institutes (e.g. AEE-Intec for solar thermal) combined with UNIDO Technical Execution Support
	International Expertise			0%		0%		0%		0%	0	
	Local Travel			0%		0%		0%		0%	0	
	National Expertise			2%	3,333	2%	3,333	2%	3,333	5%	10,000	
	Training/Workshops			9%	20,000	9%	20,000	9%	20,000	28%	60,000	
	Equipment			0%		0%		0%		0%	0	
	Miscellaneous			0%		0%		0%		0%	0	
	Output sub-total	0	0	11%	23,333	11%	23,333	11%	23,333	32%	70,000	
TOTAL Component 3		19%	41,072	47%	102,172	23%	48,833	11%	23,333	100%	215,410	
GEF Grant Budget Component 4												
Project Component 4 (PC4): Project monitoring and evaluation	Type of Expense	Yr 1		Yr 2		Yr 3		Yr 4		Output Total		Envisaged Execution Modality to be discussed in detail in the kick-off meeting
<i>Output 4.1. Mid-</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	UNIDO

<i>term review and terminal evaluation executed</i>	International Expertise			35%	22,500			35%	22,500	69%	45,000	Implementing Agency
	Local Travel			0%				0%		0%	0	
	National Expertise			0%				0%		0%	0	
	Training/Workshops			0%				0%		0%	0	
	Equipment			0%				0%		0%	0	
	Miscellaneous			0%				0%		0%	0	
	Output sub-total	0	0	35%	22,500	0	0	35%	22,500	69%	45,000	
<i>Output 4.2. Project's progress monitored, documented and recommended actions formulated</i>		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	UNIDO Implementing Agency
	International Expertise	0%		0%		0%		0%		0%	0	
	Local Travel	4%	2,500	4%	2,500	4%	2,500	4%	2,500	15%	10,000	
	National Expertise	0%		0%		0%		0%		0%	0	
	Training/Workshops	0%		0%		0%		0%		0%	0	
	Equipment	0%		0%		0%		0%		0%	0	
	Miscellaneous	5%	3.250	5%	3.250	5%	3.250	5%	3.250	19%	13.000	
Output sub-total	8%	5.750	8%	5.750	8%	5.750	8%	5.750	34%	23.000		
TOTAL Component 4		8%	5.750	42%	28.250	8%	5.750	42%	28.250	100%	68.000	
Project Management Costs (PMC)		w/w	\$	w/w	\$	w/w	\$	w/w	\$	w/w	\$	Part of execution agreement with MIRNA/DGRNE combined with UNIDO Technical Execution Support
	Local Travel	0%		0%		0%		0%		0%	0	
	National Expertise (e.g. Project Coordinator)	21%	30.000	21%	30.000	21%	30.000	21%	30.000	85%	120.000	
	International Expertise	0%		0%		0%		0%		0%	0	
	National Expertise (e.g. Procurement Specialist)	0%		0%		0%		0%		0%	0	
	Training/Workshops	0%		0%		0%		0%		0%	0	
	Equipment	0%		0%		0%		0%		0%	0	
Miscellaneous	4%	5.165	4%	5.165	4%	5.165	4%	5.165	15%	20.661		
TOTAL PMC		25%	35.165	25%	35.165	25%	35.165	25%	35.165	100%	140.661	
TOTAL											1,575,571	

Project Components	Expected Outputs	GEF (USD)	Co-Finance (USD)	Total (USD)	GEF Disbursements (USD)			
					Year 1	Year 2	Year 3	Year 4
Project Component 1 (PC1): Policy, legal and regulatory framework for sustainable energy	Output 1.1. Coherent national sustainable energy policies with RE&EE targets established and under implementation	\$87,500	\$200,920	\$288,420	\$43,750	\$43,750		
	Output 1.2. Proposals for sustainable energy legislation, standards and a package of incentives developed, and their implementation facilitated	\$127,500	\$0	\$127,500	\$63,750	\$63,750		
	Output 1.3. EE standards for electric appliances are developed and their implementation facilitated	\$15,000	\$90,000	\$105,000	\$10,000	\$5,000	\$0	\$0
	Output 1.4. Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration	\$40,000	\$20,000	\$60,000	\$10,000	\$10,000	\$10,000	\$10,000
Sub-Total PC1		\$270,000	\$310,920	\$580,920	\$127,500	\$122,500	\$10,000	\$10,000
Project Component 2 (PC2): Sustainable energy investment promotion	Output 2.1: The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated	\$70,000	\$43,500	\$113,500	\$70,000			
	Output 2.2: A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums	\$72,500	\$0	\$72,500	\$72,500			
	Output 2.3: Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects	\$623,287	\$19,182,598	\$19,805,885	\$311,643	\$311,643		
	Output 2.4: Based on existing instruments, a Financing Facility is established and supports priority sustainable energy projects and business ideas	\$115,713	\$3,098,563	\$3,214,276		\$38,571	\$38,571	\$38,571
Sub-Total PC2		\$881,500	\$22,324,661	\$23,206,161	\$454,143	\$350,214	\$38,571	\$38,571
Project Component 3 (PC3): Qualification and	Output 3.1. Improved qualification, certification and accreditation framework on sustainable energy	\$10,000	\$65,000	\$75,000	\$6,667	\$3,333		

certification framework for sustainable energy	Output 3.2: Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas	\$51,000	\$37,600	\$88,600		\$25,500	\$25,500	
	Output 3.3: On-line training program on sustainable energy solutions for islands is developed in Portuguese and applied by capacity building institutions and experts in Sao Tome and Principe, Cabo Verde and Guinea-Bissau	\$0	\$100,000	\$100,000				
	Output 3.4. Capacity support is provided for the operationalization of the National RE Associations	\$15,600	\$50,300	\$65,900		\$15,600		
	Output 3.5: At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on renewable energy and energy efficiency issues	\$68,810	\$49,790	\$118,600	\$34,405	\$34,405		
	Output 3.6: Improved capacities of key stakeholders through national and sub-regional trainings, by train-the trainer approaches and training missions	\$70,000	\$8,839	\$78,839		\$23,333	\$23,333	\$23,333
Sub-Total PC3		\$215,410	\$311,529	\$526,939	\$41,072	\$102,172	\$48,833	\$23,333
Project Component 4 (PC4): Project monitoring and evaluation	Output 4.1. Mid-term review and terminal evaluation executed	\$45,000	\$45,000	\$90,000		\$22,500		\$22,500
	Output 4.2. Project's progress monitored, documented and recommended actions formulated	\$23,000	\$84,000	\$107,000	\$5,750	\$5,750	\$5,750	\$5,750
Sub-Total PC4		\$68,000	\$129,000	\$197,000	\$5,750	\$28,250	\$5,750	\$28,250
PMC		140.661	275.880	416.541	\$35.165	\$35.165	\$35.165	\$35.165
Total Project Costs		\$1,575,571	\$23,351,990	\$24,927,561	\$663,630	\$638,301	\$138,320	\$135,320

ANNEX I: WORK PLAN

Expected Outputs	Time-Frame																GEF Budget USD
	Y1				Y2				Y3				Y4				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Project Component 1 (PC1): Policy, legal and regulatory framework for sustainable energy																	270,000
<i>Outcome 1: Accelerated RE&EE market development through improved policy and regulatory framework and effective public-private coordination</i>																	
Output 1.1. Coherent national sustainable energy policies with RE&EE targets established and under implementation																	87,500
Output 1.2. Proposals for sustainable energy legislation, standards and a package of incentives developed, and their implementation facilitated																	127,500
Output 1.3. EE standards for electric appliances are developed and their implementation facilitated																	15,000
Output 1.4. Strengthening STP and raising awareness to become a hub for sustainable energy and island technology demonstration																	40,000
Project Component 2 (PC2): Sustainable energy investment promotion																	881,500
<i>Outcome 2. Increased investments in sustainable energy infrastructure and businesses</i>																	
Output 2.1: The STP RE and EE Status Report and the GIS-based National RE Resource Mapping identifying high-impact priority sites are developed and disseminated																	70,000
Output 2.2: A National Sustainable Energy Investment Plan (NSEIP) is developed and presented to investors and financiers in at least two (2) investment forums																	72,500
Output 2.3: Demonstrated viability and feasibility of innovative renewable energy and energy efficiency investment projects																	623,287
Output 2.4: Based on existing instruments, a Financing Facility is established and supports priority sustainable energy projects and business ideas																	115,713
Project Component 3 (PC3): Qualification and certification framework for sustainable energy																	215,410
<i>Outcome 3. Enhanced domestic public and private sector capacities to plan, implement, operate and innovate sustainable energy products and services in island contexts</i>																	

Output 3.1. Improved qualification, certification and accreditation framework on sustainable energy																		10,000
Output 3.2: Enhanced qualification and innovation capacities of public institutions in sustainable energy priority areas																		51,000
Output 3.3: On-line training program on sustainable energy solutions for islands is developed in Portuguese and applied by capacity building institutions and experts in Sao Tome and Principe, Cabo Verde and Guinea-Bissau																		0
Output 3.4. Capacity support is provided for the operationalization of the National RE Associations																		15,600
Output 3.5: At least five (5) capacity building institutions and fifteen (15) certified trainers engage in capacity building courses on renewable energy and energy efficiency issues																		68,810
Output 3.6: Improved capacities of key stakeholders through national and sub-regional trainings, by train-the trainer approaches and training missions																		70,000
Project Component 4 (PC4): Project monitoring and evaluation																	68,000	
<i>Outcome 4. Project's progress towards objectives continuously monitored and evaluated.</i>																		
Output 4.1. Mid-term review and terminal evaluation executed																		45,000
Output 4.2. Project's progress monitored, documented and recommended actions formulated																		23,000

ANNEX J: ABBREVIATIONS AND ACRONYMS

AA	Action Agenda
ADA	Austrian Development Agency
ADENE	Portuguese Energy Agency (Agência para a Energia (Portugal))
AECID	Spanish Agency of International Cooperation for Development (Agencia Española de Cooperación Internacional para el Desarrollo)
AFAP	Project Management Fiduciary Agency (Agência Fiduciária de Administração de Projetos)
AfDB	African Development Bank
AGER	General Regulatory Authority (Autoridade Geral de Regulação)
ALER	Lusophone Renewable Energy Association (Associação Lusófona de Energias Renováveis)
ANS-STP	National Petroleum Agency of STP
APR	Annual Project Review
BAU	Business as Usual
CCIAS	Chamber of Commerce, Industry, Agriculture and Services (Câmara do Comércio, Indústria, Agricultura e Serviços)
CCTT	Climate Change Tracking Tool
CDM	Clean Development Mechanism
CERMI	Centre for Renewable Energy and Industrial Maintenance (Centro De Energias Renovaveis E Manutenção Industrial)
CFL	Compact Fluorescent Lights
CIEMAT	Centre for Energetic, Environmental and Technological Research (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas)
CSO	Civil Society Organisations
DGA	Directorate General of the Environment (Direcção Geral de Ambiente)
DGRNE	Directorate General of Natural Resources and Energy (Direcção Geral dos Recursos Naturais e Energia)
DGTH	Directorate-General of Tourism and Hotels (Direcção Geral do Turismo e Hotéis)
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EDP	Energia de Portugal
EE	Energy Efficiency
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EMAE	National Water and Energy Utility (Empresa de Água e Energia)
ENIEG	National Strategy for Gender Equality (Estratégia Nacional para a Igualdade e Equidade de Género)
EREF	ECOWAS Renewable Energy Facility
ESCOs	Energy Service Companies
ESIA	Environmental and Social Impact Assessment
FiT	Feed-in-Tariff
GDP	Gross Domestic Product
GEEW	Gender Equality and Empowerment of Women
GEF	Global Environment Facility
GHG	Greenhouse gases
GIS	Geographical Information System
HDI	Human Development Index
HPP	Hydropower Plant
HV	High Voltage
INE	National Statistics Institute (Instituto Nacional de Estatística)
INPIEG	National Institute for Gender Equality Promotion (Instituto Nacional para a Promoção da Igualdade e da Equidade de Género)
IPCC	Intergovernmental Panel on Climate Change
IPPs	Independent Power Producers
IRR	Internal Rate of Return
IT	Information Technology

IW	Inception Workshop
KPI	Key Performance Indicators
LCPDP	Least-Cost Power Development Plan
LV	Low Voltage
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MFCEA	Ministry of Finance, Commerce and Blue Economy (Ministério das Finanças, Comércio e Economia Azul)
MHPP	Micro-Hydropower Plant
MIRNA	Ministry of Infrastructure, Natural Resources and Environment (Ministério das Infraestruturas, Recursos Naturais e Ambiente)
MTR	Mid-term Review
MV	Medium Voltage
NDC	Nationally Determined Contributions
NEEAP	National Energy Efficiency Action Plan
NGO	Non-Governmental Organisation
NPC	National Project Coordinator
NPV	Net Present Value
NSEIP	National Sustainable Energy Investment Plan
NSEP	National Sustainable Energy Platform
PALOP	African countries with Portuguese as official language (Países Africanos de Língua Oficial Portuguesa)
PC	Project Component
PFAN	Private Financing Advisory Network
PIF	Project Information Form
PIR	Project Implementation Review
PMU	Project Management Unit
PPAs	Power Purchase Agreements
PPG	Project Preparation Grant
PPPs	Public Private Partnerships
PRF	Project's Results Framework
PSC	Project Steering Committee
PSRP	Power Sector Recovery Project
PV	Photovoltaic
R&D	Research and Development
RAP	Príncipe Autonomous Region (Região Autónoma de Príncipe)
RE	Renewable Energy
RJSE	Legal Regime of the Electricity Sector (Regime Jurídico do Sector Eléctrico)
SDG	Sustainable Development Goals
SEforAll	Sustainable Energy for All
SHPP	Small Hydropower Plant
SIDS	Small Island Developing State
SME	Small and Medium-size Enterprises
STP	São Tomé e Príncipe
STP-SEFF	São Tomé e Príncipe Sustainable Energy Financing Facility
TA	Technical Assistance
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organisation
WB	World Bank

The following Annexes are included in separate files from the present CEO Endorsement Document:

ANNEX K: BASELINE REPORT AND VALIDATION WORKSHOP DOCUMENTATION

Name of the file “Annex_K_Baseline_Report_STP_vfinal.pdf” (pdf file)

Workshop documentation: <http://www.aler-renovaveis.org/en/activities/events/sao-tome-and-principe-validation-workshop/>

ANNEX L: PROJECT PIPELINE

Name of the file “Annex_L_Projects_Pipeline_potential.pdf” (pdf file)

ANNEX M: EDP STUDIES AND MARCH 2018 MISSION REPORT TO STP OF THE INTERNATIONAL HYDROPOWER EXPERT

Name of the files: “Annex_M_EDP_Studies_Hydro_Report.zip” and “Annex_M_HydroMission Report_final_rev1_CONFIDENTIAL” (both are pdf files)

ANNEX N: CLIMATE CHANGE MITIGATION ESTIMATES

Name of the file “Annex_N_GEF_GHG_Mitigation_Tool.zip” (zip file with xlsx files inside)

ANNEX O: CO-FINANCING LETTERS

Name of the file “Annex_O_LettersCofinancing_17082018.pdf” (pdf file)

ANNEX P: UNIDO ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Name of the file “Annex_P_UNIDO_Environmental_and_Social_Management_Plan_STP.pdf” (pdf file)