



Part I: Project Information

GEF ID

10999

Project Type

MSP

Type of Trust Fund

GET

CBIT/NGI

CBIT **No**

NGI **No**

Project Title

Integrated adoption of electric mobility in the maritime sector through clean technology innovation

Countries

Cabo Verde

Agency(ies)

UNIDO

Other Executing Partner(s)

Ministry of Industry, Trade and Energy; UNIDO

Executing Partner Type

Government

GEF Focal Area

Climate Change

Sector

Transport/Urban

Taxonomy

Focal Areas, Influencing models, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Transform policy and regulatory environments, Demonstrate innovative approaches, Stakeholders, Local Communities, Type of Engagement, Participation, Information Dissemination, Consultation, Civil Society, Academia, Non-Governmental Organization, Beneficiaries, Gender Equality, Gender Mainstreaming, Gender results areas, Access to benefits and services, Capacity, Knowledge and Research, Training, Knowledge Generation, Capacity Development, Innovation

Rio Markers

Climate Change Mitigation

Principal Objective 2

Climate Change Adaptation

No Contribution 0

Biodiversity

No Contribution 0

Land Degradation

No Contribution 0

Submission Date

2/14/2023

Expected Implementation Start

12/1/2023

Expected Completion Date

12/1/2027

Duration

48In Months

Agency Fee(\$)

95,837.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-1-2	Promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technologies and electric mobility	GET	1,008,806.00	2,610,000.00
Total Project Cost(\$)			1,008,806.00	2,610,000.00

B. Project description summary

Project Objective

To advance the adoption of electric mobility in the transport (maritime and road) sector particularly for remote villages integrated with the use of renewable energy (RE) options.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
PC1: Policy and institutional support to promote low-carbon maritime mobility solutions	Technical Assistance	Outcome 1.1: Capacity building and support for creation and implementation of low-carbon energy and sustainable maritime transport policy is provided	Output 1.1.1: Sustainable Maritime Transport Unit (SMTU) is established	GET	158,700.00	294,447.00
			Output 1.1.2: Capacity development of interested government agencies and other institutions is provided			
			Output 1.1.3: A roadmap for upscale of low-carbon energy and maritime transport solutions is developed and presented for validation by the Ministry of the Sea and the Ministry of Industry, Trade and Energy			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
PC2: Support the supply of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions related technologies	Technical Assistance	Outcome 2.1 Potential of low-carbon energy and transport solutions is demonstrated and recognized	Output 2.1.1: Feasibility study for broader low-carbon energy and transport solutions is developed	GET	120,000.00	280,314.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
PC2: Support the supply of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions related technologies	Investment	Outcome 2.1 Potential of low-carbon energy and transport solutions is demonstrated and recognized	<p>Output 2.1.2: Infrastructure for the charging of electric batteries is installed in two target villages</p> <p>Output 2.1.3: Two (2) Community Batteries Leasing/Renting Centres are established</p> <p>Output 2.1.4: Demonstration of low-powered, battery-swap electric marine vessels to demonstrate shared access to electric marine propulsion systems in the two (2) target villages</p>	GET	481,746.00	1,054,513.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
PC3: Stimulation of the demand for electric battery services	Technical Assistance	Outcome 3.1: National and local awareness of low-carbon energy and transport solutions enhanced and supported by information from demonstrations	<p>Output 3.1.1: Stakeholders' awareness of the benefits, effectiveness and viability of maritime electric mobility is enhanced through community-level awareness raising services provided and educative material disseminated, in particular via the establishment of a public information platform</p> <p>Output 3.1.2: Demonstration projects showcased through case studies</p> <p>Output 3.1.3: Awareness raising sessions and training programs provided on the results and learnings from the</p>	GET	91,400.00	333,707.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
			demonstrations			
PC4: Monitoring and Evaluation	Technical Assistance	Outcome 4.1: Monitoring of results and evaluation	Output 4.1.1: Project effectively monitored Output 4.1.2: Mid-term review and independent terminal evaluation conducted	GET	66,000.00	400,689.00
Sub Total (\$)					917,846.00	2,363,670.00
Project Management Cost (PMC)						
	GET		90,960.00			246,330.00
Sub Total(\$)			90,960.00			246,330.00
Total Project Cost(\$)			1,008,806.00			2,610,000.00

Please provide justification

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
GEF Agency	UNIDO	Grant	Investment mobilized	50,000.00
GEF Agency	UNIDO	In-kind	Recurrent expenditures	150,000.00
Recipient Country Government	The Ministry of Industry, Trade and Energy (MICE)	In-kind	Recurrent expenditures	410,000.00
Recipient Country Government	The Ministry of Industry, Trade and Energy (MICE)	Grant	Investment mobilized	20,000.00
Recipient Country Government	Ministry of the Sea	In-kind	Recurrent expenditures	400,000.00
Recipient Country Government	Ministry of the Sea	Grant	Investment mobilized	10,000.00
Recipient Country Government	National Fisheries Development Institute (IMAR)	In-kind	Recurrent expenditures	200,000.00
Recipient Country Government	ENAPOR (National Port Administration Company)	In-kind	Recurrent expenditures	200,000.00
Beneficiaries	Porto Novo municipality	In-kind	Recurrent expenditures	50,000.00
Private Sector	APP (?guas de Ponta Preta)	In-kind	Recurrent expenditures	670,000.00
Other	University of Cabo Verde	In-kind	Recurrent expenditures	200,000.00
Other	ECREEEE	In-kind	Recurrent expenditures	50,000.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Other	EMAR (Escola do Mar)	In-kind	Recurrent expenditures	200,000.00
Total Co-Financing(\$)				2,610,000.00

Describe how any "Investment Mobilized" was identified

Investment for the project was identified at both PIF and PPG stages: ? PIF: Initial investment mobilization has been conducted at PIF stage through consultation of stakeholders on funding priorities and according to the existing and forecast pipeline of projects. Each of the project's four project components (PC) required funds to be mobilized. A big proportion of the funds is to support the supply and installation of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions and related technologies including electric marine propulsion systems, solar charging stations (and/or at least the services required to connect to existing RE services), services associated with their installation and deployment, and local technical and parts supply services, and the rest, much needed technical assistance (TA). At the PIF stages the sources of co-finance identified were Government Institutions (Government of Cabo Verde, INDP, ENAPOR); (ii) international donors (FAO); (iv) regional institutions (ECREEE); (iv) municipalities; (v) private sector (Caixa Econ?mica de Cabo Verde); (vi) and others (University of Cabo Verde and ADAD). At the PIF stage, innovations identified under former GCIP projects were also identified as a potential additional source of co-financing and opportunity to demonstrate the project. ? PPG: During the PPG stage carried out between September 2022 and January 2023, the identified contributions at PIF stage from the recipient Government (MICE, the Ministry of the Sea, IMAR, ENAPOR), ECREEE, University of Cabo Verde were validated and, in some cases, raised (e.g. IMAR more than doubled its co-finance and University of Cabo Verde doubled its co-finance). In addition to these, new co-finance partners were identified at the PPG stage, namely: APP and Porto Novo Municipality. Within the PPG stage, several consultations were carried out with financial institutions ? Caixa Econ?mica de Cabo Verde, BAI Cabo Verde ? as well as with other potential co-finance entities to try to raise as much financing as possible for the project. However as this is quite a new area to be tackled in Cabo Verde, it was very difficult to raise co-finance. During the consultations, Caixa Econ?mica de Cabo Verde reinforced its intent to participate in the project implementation (reflected by the co-finance letter provided by them). However, they were reluctant to insert a value to the co-finance, as it is not clear at the moment what are the financial needs of the pilots, and thus, they cannot stipulate the products/value of the products to be made available for the project. ? Caixa Econ?mica de Cabo Verde has a series of instruments that will be available to the proposed project and its pilot projects: (i) Investment Credit that can be applicable for acquisition of equipment and transport vehicles among other investment; (ii) Renewable Energy Credit that is available for acquisition of renewable energy equipment; (iii) Caixa Microcredit that is available for microenterpreneurs and low-income individuals who operate in any sector of the economy (iv) Subsidized Loans aimed at renewable energy microgeneration (within the signed protocol that Caixa has with the Cabo Verde Government). It was agreed that once the proposed project has the pilots completely identified

including their financing needs that the Project Coordinator will approach Caixa with the Pilots Proponent and discuss the financial instrument / group of financial instruments that can be made available to that pilot and their financial value. ? BAI Cabo Verde , referred during the consultations that they were very interested to support the project, however they were also not comfortable in providing a co-finance letter with a specified value. BAI Cabo Verde has also several products that can make available for the pilots to be supported by the GEF/UNIDO project. Even after PPG stage, we consulted the bank and they showed their interest in the project and willingness to co-financing, however they were not able to provide a letter of intent at that stage before in-depth feasibility study because of the bank's policy. Yet, we have requested them to give us a letter and the possibility of placing a tentative amount on an exceptional basis. The Comercial Director of the bank stated that the letter is still with the Chairman. ? BCN (Banco Caboverdiano de Neg?cios) ? BCN was also contacted, and the responsible Director of the bank confirmed their interest in the project and has been considering the co-financing. ? In addition, UNIDO is in consultations with the FAO Cabo Verde on potential co-finance, and they promised to consider it given that it is mutually beneficial for FAO and UNIDO to strengthen collaboration between GIZ/NAMA and UNIDO projects, and opportunities within the Blue Economy plan. It is important to highlight, that UNIDO continues to undertake discussions with co-financing stakeholders in Cabo Verde (e.g. World Bank, FAO, etc.) to try to raise additional co-funding for the project implementation.

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

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNIDO	GET	Cabo Verde	Climate Change	CC STAR Allocation	1,008,806	95,837	1,104,643.00
Total Grant Resources(\$)					1,008,806.00	95,837.00	1,104,643.00

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)
PPG Required **true**

PPG Amount (\$)
50,000

PPG Agency Fee (\$)
4,750

Agenc y	Trus t Fun d	Countr y	Focal Area	Programmin g of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNIDO	GET	Cabo Verde	Climat e Change	CC STAR Allocation	50,000	4,750	54,750.00
Total Project Costs(\$)					50,000.00	4,750.00	54,750.00

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	6000	2054	0	0
Expected metric tons of CO ₂ e (indirect)	160000	154820	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	6,000	2,054		
Expected metric tons of CO ₂ e (indirect)	160,000	154,820		
Anticipated start year of accounting	2023	2023		
Duration of accounting	10	10		

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
------------	------------------------------------	--	------------------------------------	-----------------------------------

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	600	800		
Male	1,400	1,200		
Total	2000	2000	0	0

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

Please refer to the uploaded annex GHG calculations as well as to the section Global Environmental Benefits for more information on the core indicators.

Part II. Project Justification

1a. Project Description

describe any changes in alignment with the project design with the original pif

During the PPG phase, the set-up of the project was further detailed and has been adapted in accordance with the findings and priorities of the country. Even though the structure and nature of the current project does not have significant changes compared with the project design at PIF level, the tables below describe the main differences between the Request for CEO Approval (herein after called RCA) document and the approved PIF.

Table 1: Comparison of the Project Description Summary (Table B) between the original description at PIF stage and this RCA document

At PIF stage (original)	RCA (current document)
Output 2.1.3 Center to support the leasing/renting of batteries established in two target villages	Output 2.1.3: Two (2) Community Batteries Leasing/Renting Centres are established
Output 3.1.1 Demonstration of low-powered, battery-swap electric marine vessels and demonstration of shared access to electric marine propulsion systems in two target villages	Output 2.1.4: Demonstration of low-powered, battery-swap electric marine vessels to demonstrate shared access to electric marine propulsion systems in the two (2) target villages
Output 4.1.1 Monitoring and mid-term review	Output 4.1.1 Project effectively monitored
Output 4.1.2 Independent terminal evaluation conducted	Output 4.1.2: Mid-term review and independent terminal evaluation conducted
Greenhouse Gas Emissions Mitigated (metric tons of CO ₂ e): Direct: 6,000 tCO ₂ e Indirect: 160,000 tCO ₂ e (one life-cycle of 10 years)	Greenhouse Gas Emissions Mitigated (metric tons of CO ₂ e): Direct: 2,054 tCO ₂ e Indirect: 154,820 tCO ₂ e (one life-cycle of 10 years)

Table 2: Comparison of the co-finance allocation between original PIF and the RCA document

At PIF stage (original)	RCA (current document)
Co-finance: US\$4,819,522	Co-finance: US\$2,610,000

As it can be seen in Table 1, most changes between the PIF and the RCA were on the title of the outputs. Whenever possible, clarity was provided by quantifying the expected outputs or/and by specifically indicating the actions to be put in place.

Additionally, the emissions reduction calculations have also changed between the PIF and the PPG stage mainly due to the factor:

? Not all the e-mobility solutions expected to be implemented at PIF stage (maritime and road transport solutions) could be considered for the identified pilots, leading to a reduction on the GHG emission reductions expected from the project. If we examine the case of the Monte Trigo, for example, which was pre-selected as pilot site because the village has a huge demand and potential of development and replication of electric outboards, a battery swapping station and renewable energy systems, and also the site was highly recommended by the MICE given the above mentioned potential. However, since there are no traditional roads, there are fewer possibilities for e-bikes as well as other electric vehicle solutions which will result in fewer GHG emission reductions.

Furthermore, there were also changes in terms of the co-finance raised during the PPG stage. This change is mainly attributed to the fact that the Banks in Cabo Verde, although very interested in participating in the project, are reluctant to value their participation and insert it on a letter of co-finance. Their interest is proven by the Letters of Intent to Co-finance provided by them, but without a concrete figure.

1.1 Country Context and background

1.1.1. General Information

Located in the Atlantic Ocean, the Cape Verde archipelago is close to the west coast (600 to 800 km) of the Republic of Senegal. The archipelago occupies a total area of 4,033 km² of 10 islands and five islets. Santiago is the largest island of all, with 991 km² and the smallest is the island of Santa Luzia (35 km²) and also the only uninhabited island. Of volcanic origin, geomorphologically, the islands are very diverse. The western islands (Sal, Boavista and Maio) and Santa Luzia have relatively extensive plains and fairly attenuated relief, while in the remaining islands (Santo Ant?o, S?o Vicente, S?o Nicolau, Santiago, Fogo and Brava) the relief is greater reaching altitudes of hundreds or thousands of meters.

Regarding access to electricity, in 2019, according to (Statistics of households and living conditions continuous multi-purpose survey 2019 - INE), Cape Verde recorded a rate of 92.2%, distributed by 94.1% in urban areas and 88.4 in rural areas. The two municipalities with the highest and lowest penetration rates, respectively, both are located on the island of Santiago, with 99.6 percent in S?o Salvador do Mundo and 80.6 percent in the municipality of Tarrafal. Data regarding access to Water, also distributed by municipalities, mirrored a percentage of 71.2% of the population connected to the public water distribution network. In rural areas this percentage is 62.2% against 75.4% in urban areas.

	Total (%)	Urban (%)	Rural (%)
Access to Electricity	92,2	94,1	88,4
Access to the water network	71,2	75,4	62,2

According to the same study, the following table presents the percentage data regarding the ownership of land transport in Cape Verde. It also shows the percentage of boats (small boats) distributed and per household, which in addition to being used mostly in fishing activity, in some rural areas also function as a means of transportation.

	Vehicles (%)	Bikes (%)	Vessels (%)
Cabo Verde	13,3	3,8	1,0
Urban Area	15,8	4,1	0,5
Rural Area	7,3	3,2	2,0
Sex of the representant (Male)	19,4	5,6	1,3
Sex of the representant (Female)	6,9	2,0	0,6

The economy in Cabo Verde depends on development aid, foreign investment, remittances, and tourism. Despite the government's efforts, the economy remains dependent on the tourism sector and structurally reliant on imports, and that leaves the country vulnerable to changes in the global economy including COVID-19 induced lockdown measures and the Ukraine crisis, which has pushed up international commodity prices. The government's main economic policies are to improve public finances by reducing national debt, introduce preferential taxation for growth industries, stabilize the macroeconomy, attract foreign direct investment, and improve social services. The country joined the WTO in July 2008. On the other hand, the poverty rate remains high, with about 35% of the population still living on less than USD 2 per day.

The economy has USD 1.94 million of GDP^[1], and over 70% of them come from service-oriented activities such as commerce, transport, tourism, and public services. Tourism is the main sector of the economy and highly depends on conditions in the European countries. Main industries include food and beverages, fish processing, shoes and garments, salt mining, ship repair. Despite the fact that around 40% of the population lives in rural areas, the share of agricultural and fisheries in GDP is 7%, and 10% of jobs^[2]. The island economy suffers from a poor natural resource base, including serious

water shortages, exacerbated by cycles of long-term drought, and poor soil for growing food on several of the islands, requiring it to import most of what it consumes. The fishing potential, mostly lobster and tuna, is not fully exploited [3]³.

Economic reforms are aimed at developing the private sector and attracting foreign investment to diversify the economy and mitigate high unemployment. The government's elevated debt levels have limited its capacity to finance any shortfalls. Meanwhile, given the growth potential and the preservation needs of its coastal and marine natural capital, the government is increasingly placing attention on the potential of its ocean's economy as a key enabler of growth and poverty reduction. While tourism is the largest economic sector of the country's ocean economy, fisheries and maritime transport are the next two largest sectors of Cabo Verde's ocean economy[4]⁴. Fisheries includes both artisanal fisheries, a pillar for the livelihoods of small coastal communities, and the growing industrial fishing sector for processed fish products and the export market.

Although having graduated to Middle-Income Country status in 2007, Cabo Verde continues to live with significant degrees of environmental and economic vulnerability, and a low gross national income compared to other SIDS. Endemic flora and fauna species are at different stages of vulnerability, even without the looming threat of climate change.

1.1.2. Climate Change Risks

The country's climate is characterized as a dry tropical climate, with three distinct seasons, determined by the activity and intensity of the dominant regional weather systems, identified in a transition season (November to February), a dry season (March June), a rainy season (July to October)[5]⁵. The variability of the high sub- tropical mobile pressures acts as a regulating factor for precipitation anomalies, controlling the seasonal oscillation of the trade winds that blow constantly during the dry months. The oscillatory movement of the Intertropical Convergence Zone (ITCZ) stands out in the rainy season, which is characterized by winds from the Southeast and the passage of disturbances from the east[6]⁶. Annual temperatures have a low temperature range. The average annual temperature is around 25°C for coastal areas, reaching 19°C in areas above 1,000 m. The minimum values between 20°C and 21°C, correspond to January to April, and the maximum values of 26°C to 28°C in August September[7]⁷.

The country's annual relative humidity ranges between 60-85%. The average precipitation values for the arid areas of the coast is less than 100 mm (cases of the islands of Sal, Boa Vista and Mai), while for the mountainous islands the average can be around 600 mm (cases of the islands of Santiago, Fogo and Santo Ant o). Cabo Verde has very irregular rainfall, with large annual and monthly fluctuations in their values, with a very dry year often occurring after a very wet one. Even between months the amount of precipitation can vary from one value to its triple. This variation is not only temporal but

also spatial, due to differences in topography within and between the islands (mountain regions vs arid plains).

According to the Climate Change Knowledge Portal (CCKP), as per the analysis of observed average annual Mean-temperature variation across the years, it has been observed that since 1990, the temperature has been increasing at a rate of 0.04%/year[8]⁸. On the other hand, results show that annual average precipitation has been decreasing at a rate of 2%/year, with a probable reduction in the wet season rainfall[9]⁹. The reduction in average rainfall is also highlighted in Cabo Verde NAP, that refers that recent observations show a large reduction in average rainfall due to the worsening of the prolonged drought periods that the country has been facing, mainly in the last four years[10]¹⁰.

The country has already started to experience climate change impacts, manifested through cyclical droughts of great intensity and duration.

Cabo Verde is already witnessing sea level rise, in between 2008 and 2019, sea level has risen 0.08m[11]¹¹.

In terms of expected future climate, and as it can be seen in Figure 1 Mean-temperature is expected to increase in all Shared Socioeconomic Pathways (SSP) scenarios[12]¹² with a higher increase in the SSP5-8.5 (average expected increase of 3.23°C by 2100 compared to average Mean temperature of 2014) than the SSP1-1.9 (average expected increase of 0.34°C by 2100 compared to average Mean temperature of 2014). With regards to precipitation that is expected to decrease overall, aggravating even more the prolonged droughts periods that are already being felt in the country. According to the Cabo Verde NAP, more frequent and more intense precipitation events in wet seasons are expected, which will increase flood risk, and extreme rare precipitation events are predicted to decline in dry seasons. More info on SSP scenarios and what they mean can be found in Appendix 1.

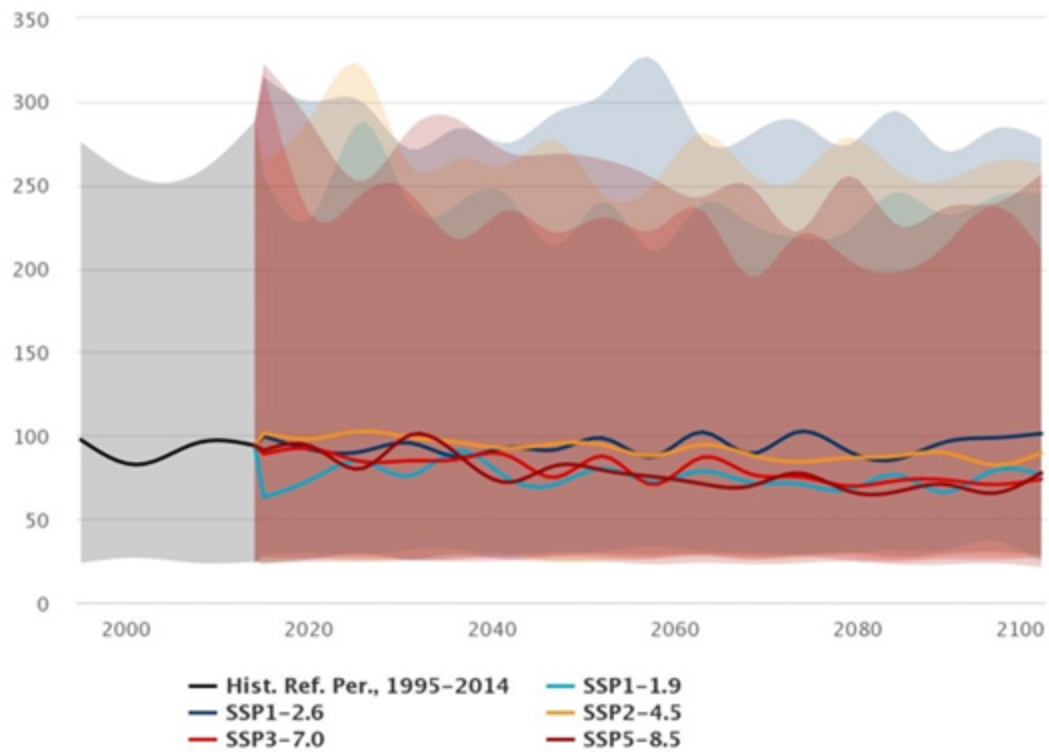
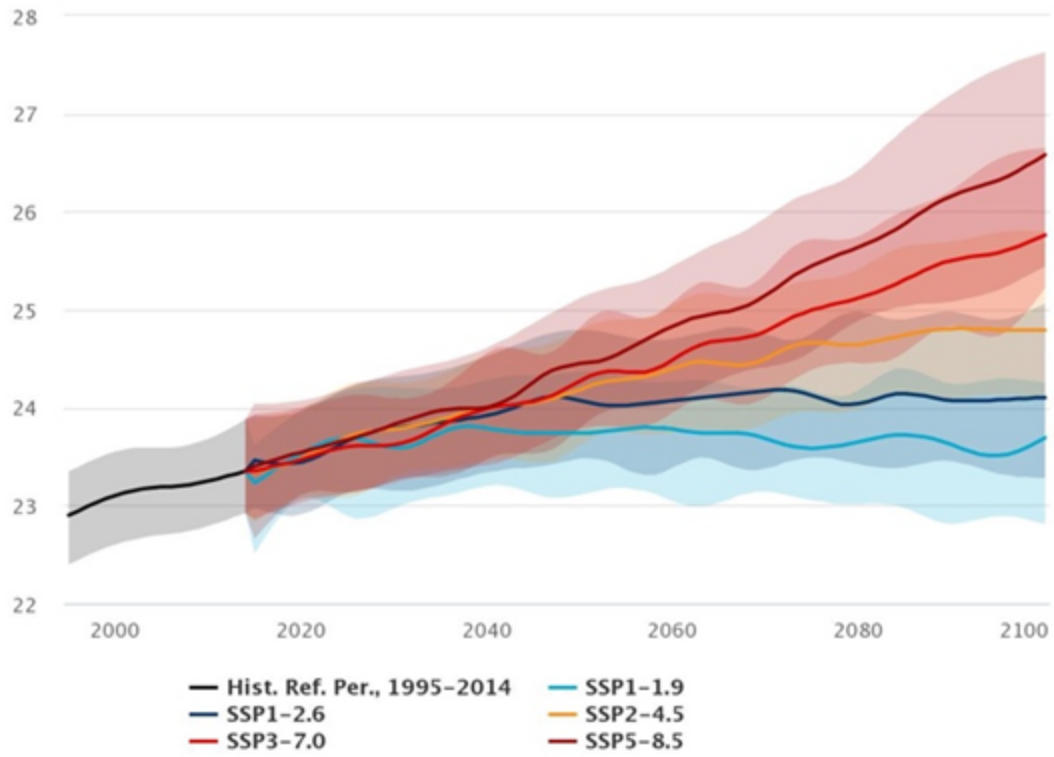


Figure 1: Project Mean-temperature Cabo Verde (left) and Projected Precipitation (right) (Ref. Period: 1995-2014) Multi-Model Ensemble^[13]¹³

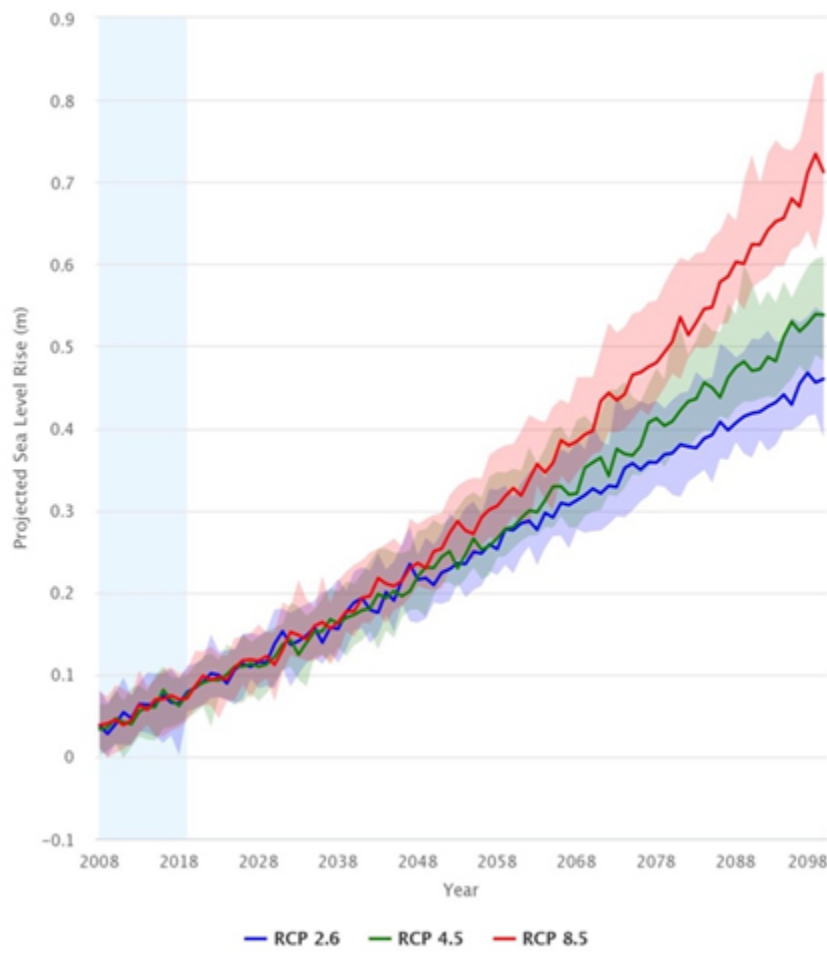


Figure 2: Projected Sea level rise of coastal Cabo Verde (reference period 2009-2019)[1]

Sea level is expected to rise in all emission scenarios, between 0.46m (in the lowest emission scenario ? RCP 2.6 equivalent to the SSP1 ? 2.6) to 0.71 m (in the highest emission scenario ? RCP 8.5 equivalent to the SSP5-8.5) in 2100, as depicted in Figure 2 . This is in line with the projections included on the Cabo Verde NAP, that refer that Cabo Verde sea level is expected to increase along the same ranges.

In terms of climate risks, while Cabo Verde is ranked 130 out of 180 in the Global Climate Risk Index 2021[14]¹⁴, the country's natural vulnerabilities, along with their social and economic implications, are very likely to be exacerbated by climate-related disruptions in the next decades given that nearly 70% of the population lives in rural areas and droughts have a negative impact on food security.

According to Cabo Verde NAP, the most significant risks that the country is exposed/most vulnerable to are[15]¹⁵:

? Loss of livelihoods, built-up areas and coastal infrastructure, eco- system services and economic stability associated with a trend of drought, storms, ocean acidification, sea-level rise, and extreme precipitation; and

? Threats to the coastline in low-lying areas due to heavy storms and sea-level rise.

For Cabo Verde, an island country, reduction of coastlines due to a possible rise in sea level could likely be a significant constraint to development and will dramatically affect coastal areas and the population (since 80% of the population live in coastal areas), tourism, loss of habitat, biodiversity and fisheries. In Cabo Verde, the main effects of sea level rise are increased coastal erosion, partial flooding depending on the tides, increased salinity in wells and boreholes located in the lowlands of the rivers, displacement of people to inner parts of the islands, abandonment of some tourist facilities located in areas affected by tides[16]¹⁶.

In terms of flooding there is more than a 20% chance of potentially-damaging coastal flood waves occurring in the next 10 years[17]¹⁷. Landslide susceptibility is classified as high, due to the increased intensity of the expected rainfall patterns, terrain slope, geology, soil, land cover and (potentially) earthquakes that make localized landslides a frequent hazard phenomenon[18]¹⁸.

70% of the population lives in rural areas and droughts, which are expected to get aggravated in the future, have a negative impact on food security in Cabo Verde. With an average 225 mm/year rainfall, approximately 20% of the water from rainfall is lost through surface runoff, 13% infiltrates, recharging aquifers, and 67% evaporates[19]¹⁹. Droughts will have an immediate and negative impact because of lower household yields in agriculture. Droughts add to decreased water availability to promote socio-economic development and add to desertification.

Like most other countries, in 2020 and 2021 the various impacts of the climate crisis were aggravated by the impacts of the COVID-19 pandemic.

1.1.3. Energy Consumption and Greenhouse Gas emissions

Notwithstanding efforts to develop its renewable energy infrastructure and energy efficiency strategies, Cabo Verde remains highly dependent upon imported fossil fuels: currently only about 32 MW of Cabo Verde's 180 MW of installed electricity generation capacity is from renewable energy sources and 80% of the roughly 400 GWh of electricity produced each year is generated from fossil fuels. Almost 100% of the transport sector is dependent upon the use of imported fuels.

The government has set a target of reaching 54% penetration by renewable energy of its electricity needs by 2030. This will require a concerted effort, as increasing quality of life and extended electricity coverage from the current 93% grid coverage will result in an increase in electricity consumption ? demanding further renewable generation to be installed if the government's targets are to be met.

The government has also set a 2030 target for a decrease in economy-wide greenhouse gas (GHG) emissions of up to 24% below its 2020 business-as-usual projection, should it receive adequate international support.^[20] This target will require a shift to lower-carbon transport modes, and the government has offered solutions involving changes to urban planning, improvements to logistics and electrifying the land and maritime fleets.

As shown by Figure 1, transport is responsible for around 40% of Cabo Verde's fuel energy requirements. Of this amount, around 75% is associated with land transport, and a large proportion of this is associated with the fuel consumed by passenger cars ? the raison d'être of the government's NAMA Support Project (NSP), which promotes electric mobility directed at displacing this vehicle type. However, other smaller-format land transport vehicles are expected to have an important part to play in Cabo Verde's future mobility plans, and it so happens that these types of vehicles are particularly suitable for electrification. Their electric forms include electric bikes, electric cargo bikes, and electric motor scooters. The role of such vehicles in the transport-scape is expected to increase as public transport evolves (for example, through providing important first- and last-mile connections with public transport, which in turn displaces the likes of passenger car transport), as their electrification makes them more useful and utilitarian (and replaces many services currently provided by fossil-fuelled vehicles), and as awareness of these new forms is raised and they become normalised. As a consequence, the use of such small-format, low-voltage land transport vehicles has the potential to result in the displacement of to the order of 10% or more of the current fuel consumption associated with land transport.

The development of this small-format vehicles sector is also expected to provide some people with new and better access to mobility, which in turn is a further incentive to target the use of renewable energy options for powering this new demand.

Understanding this importance, the proposed project aims to promote awareness of these small-format vehicle types, and to introduce them through the use of modern vehicle-sharing platforms.

Beginning from the energy use figures provided in Figure 3, a bottom-up study that considers the make-up and duty of marine vessels in Cabo Verde's fleet indicates that the fuel consumed by the artisanal fishing fleet is around 1% of the national fuel consumed, which (applying the figures of total

fuel consumed presented in Figure 4) comes to around 2.5m liters of petrol each year. Artisanal fisheries in Cabo Verde constitute around 64% of the country fishing activity, both in terms of catches and fishermen involved[21]21, and there were 1,815 vessels in the artisanal fisheries in 2017, and the number of artisanal fleet is estimated to increase with the development of the sector[22]22. It is therefore getting more and more important to support artisanal fishing fleet to promote decarbonisation of the sector. Specifically, the project will focus on remote villages where small-scale fisheries are a subsistence activity.

The type of low-powered vessel used can be relatively easily retrofitted to electric propulsion by exchanging their normally fossil-fuelled outboard with an electric one and carrying batteries to power the electric outboard. The feasibility of this in practice, and achieving the required range, is dependent upon the specific duty of the vessel. Given the present state of battery technology, such retrofits would be limited to those fishing and passenger transport operations that involve relatively short voyages (by marine standards). However, the proportion of the artisanal fishing fleet that could be considered for electrification is expected to grow as battery technology advances (i.e., as the amount of energy stored per kilogram and per liter increases).

It is expected that targeting this type of vessel ? low-powered vessels that normally undertake short voyages ? will serve to ?prove? electric propulsion technology and thus instigate the electrification of the wider fleet, including of larger vessels, as technology permits.

As with the method proposed for accessing the project?s small-format electric vehicles, it is proposed that access to electric outboards and marinized batteries will be via an asset-sharing platform. These asset-share management services have become readily accessible over the last few years. Because the project is concerned with demonstrating the technology expected to be used in the future, the asset-share services will be based on satellite-tracking of assets plus local communications systems, and access to such services will be a prerequisite for any village targeted for the demonstration projects.

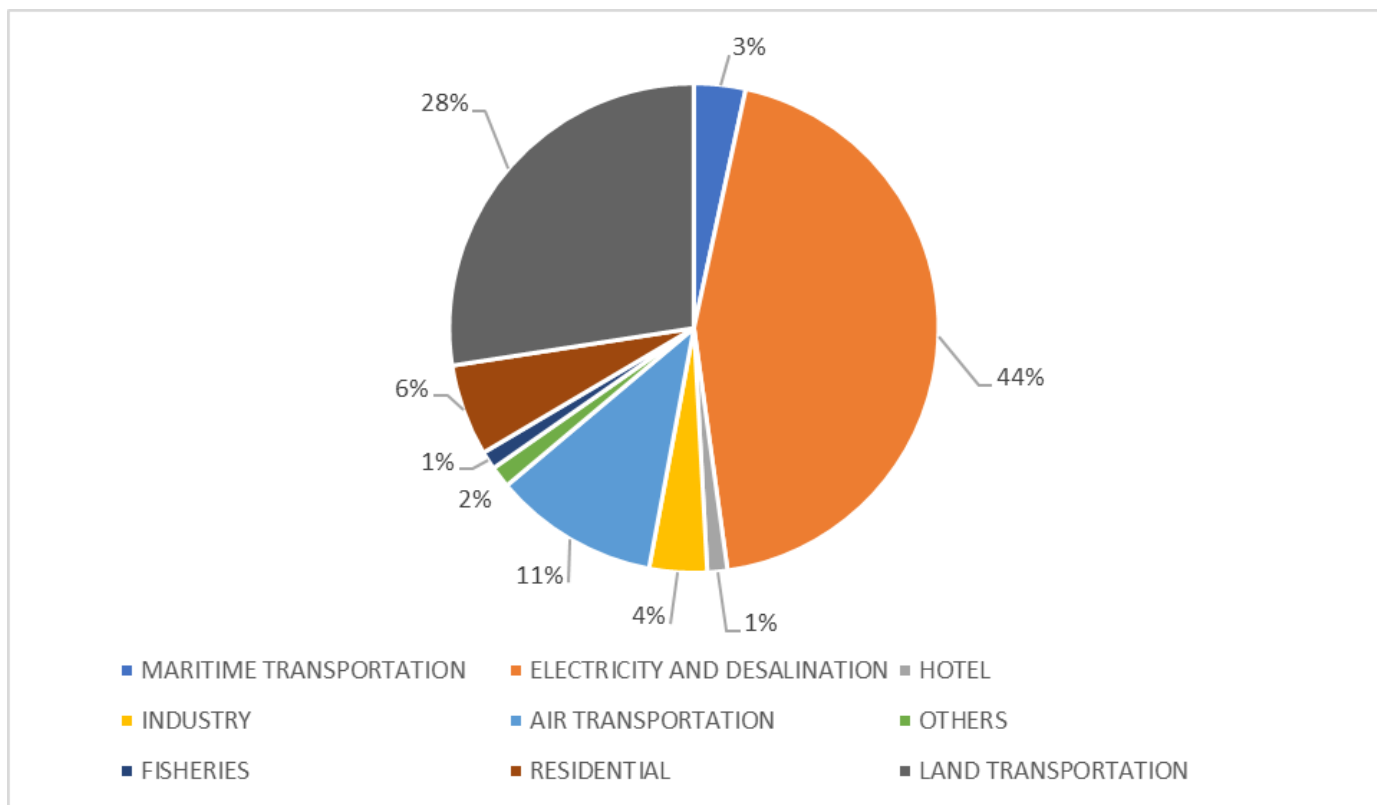


Figure 3: Cabo Verde Internal Fuel Consumption per Sector^[23]²³

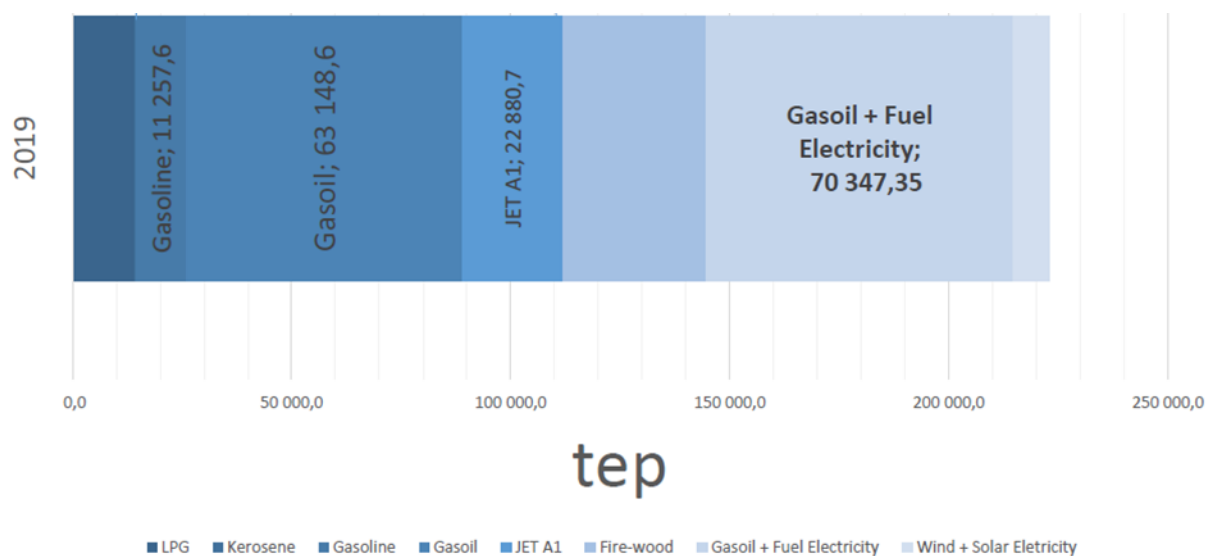
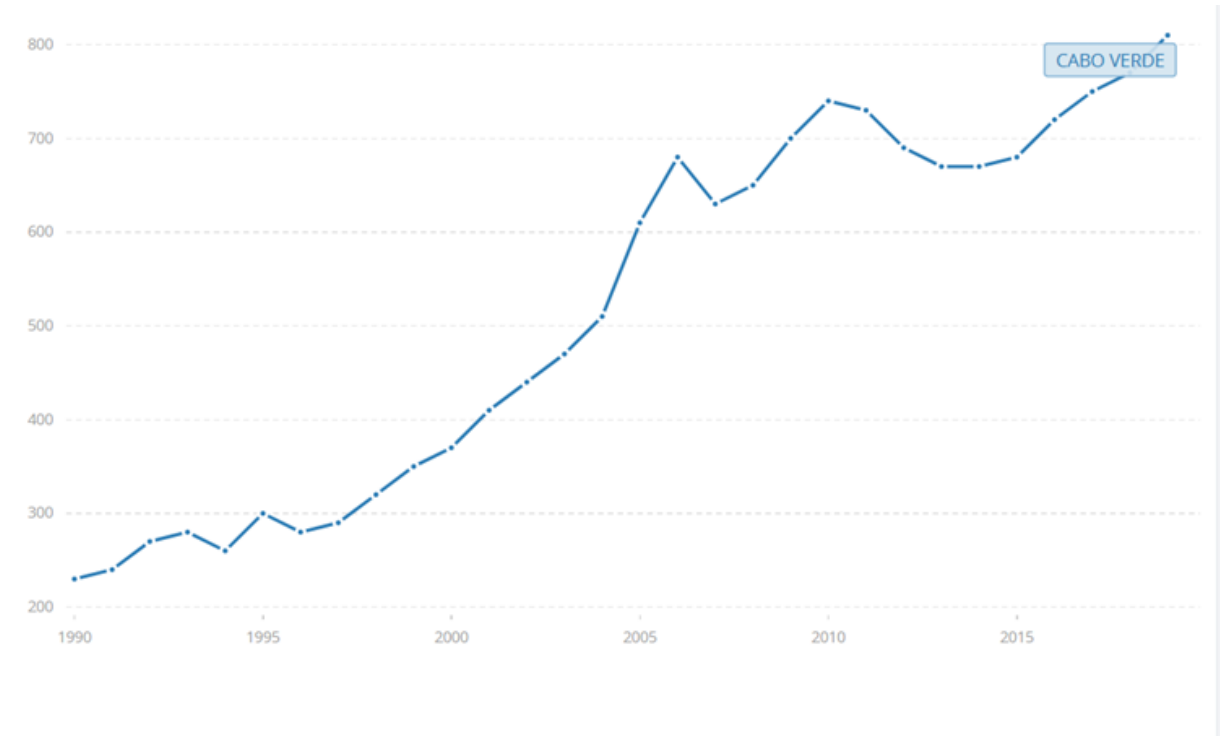


Figure 4: Cabo Verde Total Consumption of Energy[24]24

According to ClimateWatch data (www.climatewatchdata.org), greenhouse gas emissions in the archipelago of Cape Verde have been increasing since 1990. In 1990, Cape Verde registered 230 kt CO₂ and 2019, this value rose to 810, being the increase in the last 29 years of 252%. In 2007 and 2008 the emissions suffered a slight slowdown, resuming its growth rate in 2009, returning again to decrease in 2011. In the last five years there has been a growth in recorded emissions.



Year	1990	1995	2000	2005	2010	2015	2019
GHG (kt of CO ₂)	230	300	370	610	740	680	810

Figure 5: evolution of greenhouse gas emissions in Cabo Verde[25]25

1.1.4. E-Mobility Sector in Cabo Verde

In Cabo Verde, individuals, institutions and companies still rely on new and second-hand vehicles with internal combustion engines (ICE) using diesel and petrol. While the government plans to replace the country's entire vehicle fleet with electric vehicles utilizing locally generated electricity from renewable energy resources by 2050, the achievement of this target is hindered by the fact that electric

vehicles cost more than ICE vehicles, and the country also lacks the reliable supply chain, awareness and needed expertise for promoting and using electric vehicles. The barrier related to the cost is due to the significant higher upfront cost, which is only partly offset by the recently introduced import duty exemption for new Electric Vehicles. To effectively implement its strategy to promote e-mobility, the government, in collaboration with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, successfully applied for funding from the NAMA Facility to promote the use of electric vehicles[26]²⁶. Indeed, the government, which already announced a NAMA for sustainable road transport including electric mobility in its NDC, is eager to change this situation. This strategy which is to run from 2020 to 2025 includes offering financial incentives to encourage the acquisition of electric vehicles (rebates on purchases of electric vehicles), developing a public charging infrastructure, improving the legal framework for e-mobility, raising awareness of electric mobility, and strengthening the relevant stakeholders[27]²⁷.

The transport and energy sectors are sectors, among others, identified and that present goals and mitigation measures to be implemented by Cabo Verde according to the NDC, which contribute to the achievement of the goal of reducing GHG emissions by 18 or 24%. The Government of Cape Verde has identified the promotion of electric mobility as a strategy to reduce GHG emissions with road transport and as well as increasing the share of storage and penetration of renewable energy. The NDC also states that the shift from fossil fuel to electricity is not easy in maritime and air transport. However, maritime transport accounts for a large percentage of national GHG emissions that climate protection measures in shipping involve creating synergies to reduce GHG emissions and help by lowering supply costs. Given that Cabo Verde needs support to meet these ambitious mitigation goals, the country seeks to join regional and international initiatives to promote low-carbon shipping.

In order to lowering the carbon intensity of mobility, the NDC aims to achieve the following objectives:

- 1) electrify at least 25% of its land transport fleet (new vehicles) by 2030 by using RE sources;
- 2) increase to 50% the favor of public heavy-duty vehicles for freight and passenger collectives (conditioned to international support);
- 3) advance carbon-free mobility and sustainable maritime transport.

To this end, the following are the actions defined, to achieve the objectives that in some way converge with the object of this project:

- i. By 2023, quantify the national GHG reductions possible by swiftling to lower carbon international maritime transport and develop a policy framework and national action plan as a measure under the International Maritime Organisation. Encourage the international community to bring ocean transport decarbonisation technologies to scale;

- ii. By 2023, finalise a policy and targets on reducing GHG emissions in domestic maritime transport based on a detailed feasibility assessment

Furthermore, the National Development Plan: Ambition 2030 as well as the Strategic Plan for Sustainable Development (PEDS II) are the instrument that integrates the SDG's objectives aligned with the determinations of the NDC, through the definition of strategic objectives. In this sense of strategic objectives, aligned with the areas of electric mobility in the maritime sector, the government assumes, in a generic way, the objective of encouraging and promoting electric mobility in the maritime economy.

Cape Verde elected Electric Mobility as one of the sectors. In the State budget for the year 2023, the Electric Mobility appears as one of the sectors that the state has assigned tax incentives. Where the importation of electric vehicles (including two-wheelers) and their recharging equipment are exempt from the payment of: (1) Value Added Tax (VAT); (2) Excise Duty; (3) Import Duties and (4) parking fees.

1.2 Main barriers and opportunities to be addressed by the project

The barriers for penetration of e-mobility include: (1) lack of awareness and knowledge; (2) lack of strategy/roadmap for adopting electric mobility in the maritime sector; (3) lack of local supporting services; (4) Insufficient financial incentives; (5) lack of local availability of equipment; and (6) lack of demonstration projects. These were not only identified at PIF stage but also confirmed during the meetings with stakeholders and through the online questionnaire (see Figure 6).

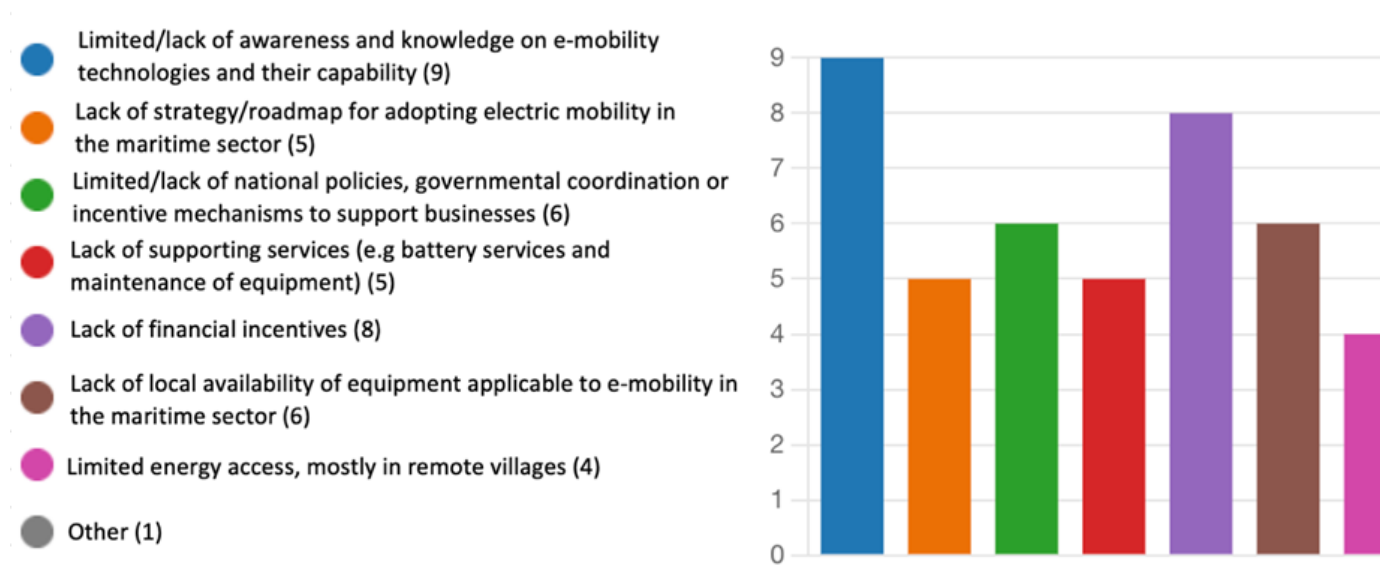


Figure 6: Online questionnaire responders views on the barriers for the uptake of e-mobility technologies in the maritime sector of Cabo Verde

? **Lack of awareness and knowledge**

The proposed technologies to be demonstrated are new to Cabo Verde and there is little awareness of them or their capabilities. This lack of understanding, which the proposed project is designed to address, is expected to be a major barrier to the uptake of the technologies involved, particularly where their use on commercial terms at the start of the project is attempted, when the cost of the various technologies may still be relatively high. The proposed project will manage this by offering the use of the demonstration vehicles, electric outboards and batteries at rates that make the use of the technologies very attractive to users. This will require some degree of subsidization over a strictly commercial, 'user-pays' arrangement.

Note that if the anticipated cost reductions and technological advances are realised, similar projects set up towards the end of this project's term would be commercially and financially attractive to service providers and users, without the need for subsidies.

? **Lack of strategy/roadmap for adopting electric mobility in the maritime sector**

The government's 2020 update to the first Nationally Determined Contribution (NDC)[\[28\]](#)²⁸ names the electrification of the land and marine transport sectors amongst the solutions to reduce the country's GHG emissions. This must be coupled with the use of renewably generated electricity if the measure is to achieve its full potential. Cabo Verde does have plans for a significant increase in the amount of renewable generation. However, its plans to electrify its land transport fleet are at a very early development stage and focus on passenger car-type electric vehicles. It is almost silent on its plans to support the electrification of marine vessels, beyond the intention advertised in Cabo Verde's Charter for Blue Economy, or for the electrification of smaller vehicle types. As such, there is still a need to develop a framework and Action Plan in order to address many of the institutional barriers that exist to the adoption of a wider e-mobility program.

•**Lack of local supporting services**

The proposed project targets the use of low-voltage applications which are relatively simple in make-up compared to the high-voltage systems used in electric passenger cars. What's more, the project targets standardized, open-source designs for the main electrical components as a means to control their sophistication and to ensure 'plug and play' compatibility. The goal is to use power electronics and assemblies that are far less challenging to work on, with standardized designs expected to make fault diagnostics and repair possible at a village level, with only a small inventory of spare parts.

The proposed shared asset arrangements also enable every battery and every electrical device to be regularly inspected by a trained person (i.e., as opposed to the more random inspection that might occur if the devices were owned by individuals). It also enables the batteries, vehicles and other electrical devices to be serviced by appropriately trained personnel, specifically engaged to maintain the fleet of shared assets. This service-provider model also lends itself to the use of good practices for managing batteries after their first life as battery-swap batteries, with a higher proportion of post-first-life

batteries expected to continue to be used through refurbishment and repurposing than would be the case had the batteries been owned by individuals. For the same reason, the best practice approach is also more likely to continue through to the eventual disposal of the batteries.

•Lack of financial incentives

While certain tools for implementation of e-mobility in land transportation in Cabo Verde have created financial incentives for passenger car-type EVs, no such incentives are in place to support the uptake of small-format, land-based e-mobility or marine electrification. This needs to be addressed.

•Lack of local availability of equipment

The project will undergo specification and procurement exercises to acquire the necessary hardware for the proposed demonstration projects. Spares and test equipment will also be procured in support of the ongoing operation of the vehicles, electric outboards, battery systems and battery-swap stations. The standardized specification of power electronics and other components will enable the various electrical devices to be supported from a relatively small inventory of spare parts. Minimum performance specifications will also be used to introduce quality standards for the devices and related components. Note that these minimum performance specifications are important when considering the use of electrical equipment in marine environments (which is the case for the vast majority of SIDS settings), and even more important when considering the safety of marine vessels and their crew and passengers. For the latter, standardized specifications for marinized batteries are also expected to bring about significant cost savings.

•Energy access gap with a focus on gender and potential productive uses

The project will address the energy access gap in remote villages. Although rural electrification rate is around 90%^[29]²⁹, people still have difficulty in accessing affordable, stable and clean electricity due to financial and technical challenges^[30]³⁰. For example, women, especially those in female-headed households, cannot easily access electricity connections due to their lack of adequate cash incomes^[31]³¹. Greater access to electricity is also expected to bring about greater access to education, including through on-line courses available by smartphones, and greater access to friends and family through the use of smartphones also. These stand to improve the quality of village life.

The fishing sector is highly segregated by sex, with men working on fishing boats and women selling the catch in markets or as casual vendors. Expanded and accessible clean energy is a key need for the almost half of Cabo Verde women who are poor, and especially those in remote areas, to decrease the time required for work. Productive uses of clean energy such as cold storage for fish will reduce the pressure of selling the fish and having to drop prices so that they guarantee that they sell it fresh quickly.

The Fisheries Sector and particularly Fisheries Resource Management Plan 2020-2024 (PGRP) find their place in the Government Programme of the 9th Legislature (2016-2021) and in the Strategic Plan for Sustainable Development PEDS (2017-2021). This sector has played a key role in strengthening food security, reducing poverty, job creation and rural development. Particularly in rural areas where

33% of the population lived in 2020 and around 30% of the population lived below poverty line with the rural unemployment rate increased from 10.7% in 2010 to 12.3% in 2020, small-scale fisheries are a subsistence activity generating significant economic revenue and job opportunities[32]32. Artisanal fisheries in Cabo Verde constitute around 64% of the country fishing activity, both in terms of catches and fishermen involved and it provides important income to a considerable number of rural households from fishing communities[33]33. In 2017, there were 1,815 vessels in the artisanal fisheries operated by 5,078 fishermen, and the number of artisanal fleet is estimated to increase with the development of the sector[34]34. It is therefore getting increasingly more important to support the artisanal fishing sector to promote sustainable economic and social development of remote villages.

The opinion of where the priority action should be focused on is divided between the consulted stakeholders, as it can be seen in Figure 7, demonstrating that action is needed across the different field: policy and regulation, financial incentives, awareness raising and capacity creation.

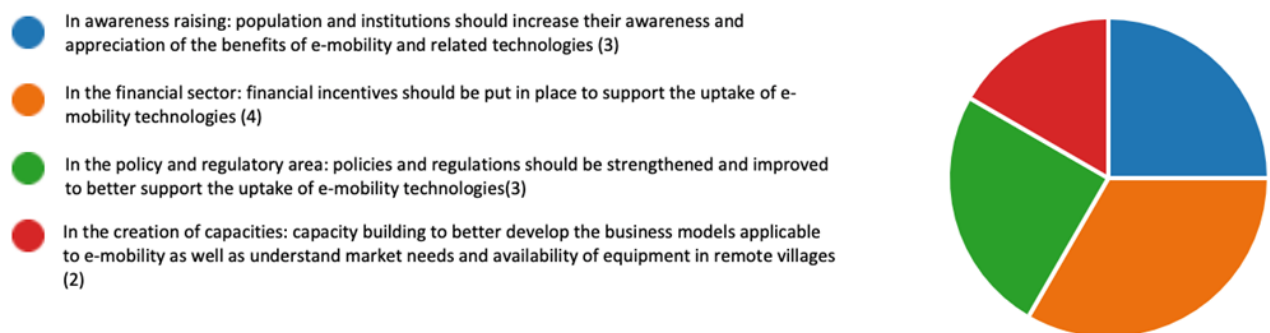


Figure 7: Online questionnaire responder on the areas where most action is needed to uptake encourage the uptake of e-mobility technologies in the maritime sector

2) THE BASELINE SCENARIO AND ANY ASSOCIATED BASELINE PROJECTS

2.1 Baseline Scenario

Cabo Verde's long-term goal is to transition to an efficient, safe and sustainable energy sector, which will reduce reliance on fossil fuels, reduce GHG emissions, and ensure greater energy access and security.[35]35 With GHG emissions growth roughly at 1% per year (3.5% growth from 2005 to 2010), The National Program for Sustainable Energy plans five axes of interventions, including the development of renewable energy (RE) and the promotion of efficiency. In addition, Law no. 102/VIII/2016 Code of Fiscal Benefits creates fiscal incentives for the use of RE technology, and the

Sectorial Strategic Plan for RE (SSPRE) lays down a plan for RE based on studies showing the available RE sources in the country and identifies 'Renewable Energy Development Zones' (REDZ). The RE projects implemented in REDZ are subject to much more simplified environmental and social impact evaluation processes. A previous strategy of achieving 100% renewable energy by 2021 has been re-evaluated and more realistic targets have been set. The Electricity Sector Master Plan for 2018-2040 targets 30% of electricity production in Cabo Verde to be RE by 2025 and 54% by 2030 (see Figure 3). The 2030 target appears well within reach – RE made up around 20% of grid-supplied electricity in 2020 and there are numerous tenders in place for the construction of RE capacity. The longer-term strategy foresees the installation of more than 150 MWp of new solar PV projects, more than 60 MW of new wind farms across Cabo Verde's territory, and installation of further storage capacity. However, to achieve these goals, significant investment and financial support is required.

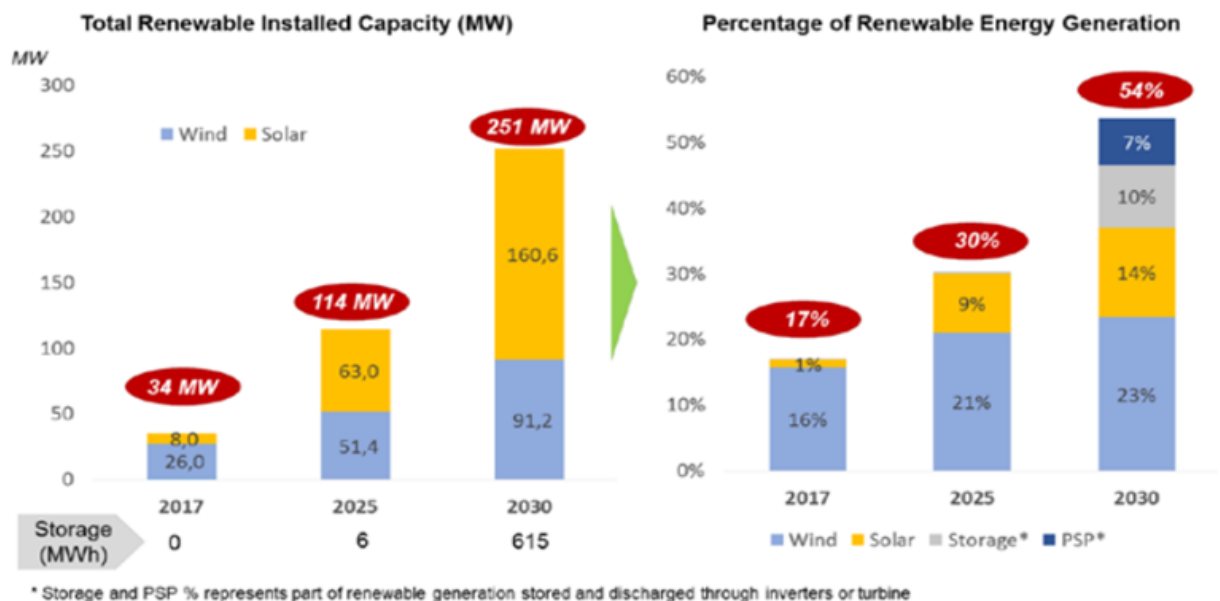


Figure 8: Strategy towards 54% RE by 2030[36]36

Recently, the government of Cabo Verde has identified the promotion of electric vehicles (EV) as one of the key investments required to reduce GHG emissions related to land transport (which accounts for roughly 28% of total fuel consumption in the country), as well as to reduce air and noise pollution and contribute to improvements in the health of the population. In line with the country's ambitions, a full transition from fossil-fuelled vehicles to electric vehicles will be sought by 2050. To implement the strategic vision of its policy on Electric Mobility, the government (via the National Directorate of Industry, Trade and Energy and through its membership of the Transport Decarbonisation Alliance)

approved the Electric Mobility Policy Charter (CPME) with Resolution No. 13/ 2019 on February 1st 2019.^[37] It communicates the main measures to guide the creation of the conditions necessary for a long-term uptake of electric vehicles in the country, assuring the adequate development of infrastructures, of the regulatory framework and of services, which allow any citizen or organization access to e-mobility solutions. The Electric Mobility Policy Charter states that: "The Government will establish in the law that public institutions (Government and Municipalities) may favor the acquisition or preferential use of Electric Vehicles in tenders for the provision of public services." According to the CPME, the aim is to develop in the timelines 2019-2035-2050 a fleet of electric vehicles (EV) for public transportation (urban and inter-urban public transportation, taxis, rental vehicles, tourist transportation), and private transportation (transportation for private use, private and public companies, and Public Administration). The charter is accompanied by an E-Mobility Action Plan 2019-2035 of which the objective is identifying actions to be developed in the short, medium and long term for the materialization of the objectives established in the mobility charter letter, grouped according to the three axes of intervention. A NAMA Support Project (NSP), Promotion of Electric Vehicles in Cabo Verde (PromAE) 2020- 2025, has recently been approved and aims to develop a market structure that is more conducive to the adoption of e-mobility.

However, the government's EV initiatives and plans have to date focused on passenger car-type EVs, and besides a small test of an electric outboard, **there have been no programs considering the electrification of maritime vessels or the use of small-format land-based electric vehicles.**

For the marine sector, the recently approved Charter for the Blue Economy in Cabo Verde, through Resolution No. 172/2020 of December 21 2020, is an indication of the intention of the country to engage with and capitalize upon the opportunities for sustainable growth that a "blue" economy can provide. The charter is accompanied by a National Investment Plan for the Blue Economy and a Program for the Development of a Blue Economy in Cabo Verde. These instruments indicate that the country intends to reinforce the coherence and integration of public policies related to its maritime economy and the coordination for an integrated approach with other sectors such as transport, renewable energy, industry, tourism, trade, environment, agriculture, fishing and aquaculture, among other areas of social and human development. This ambition foresees the use of EVs in maritime activities which, with the projected growth of the marine transport fleet in coming years, would be yet another way of transferring the benefits of increasing renewable energy grid penetration to the transport sector and helping meet the country's commitment to annually curb up to 242,000 tCO₂eq by 2030^[38], as well as building resilience through increasing food and energy security.

Policy Baseline

The following table lists the climate change mitigation policy and regulatory framework as well as provides an overview on development strategies and documents in relation to renewable energy and electric mobility.

Table 3: Policy context

Document Name	Year issued	Short Description of Document
Climate change Related Policy Documents		
<p>Cabo Verde: 2020 Update to the first Nationally Determined Contribution (NDC)</p> <p>Technology Needs Assessment (TNA) Cabo Verde</p> <p>Report</p>	2021	<p>The Cabo Verde 2020 Update to the first Nationally Determined Contribution identified the country's NDC contribution to 2030, including increase in renewable energy uptake, and long-term decarbonisation vision (2050). It identified 14 specific contributions until 2030 (5 for Mitigation and 9 for Adaptation), which will translate into a reduction in the country's emissions by at least 20%, that is, from 200,000 to 280,000 tCO₂eq, annually. For the implementation of these contributions, more than one hundred measures are identified, whose lasting impact of adaptation will also be felt in food security, water security, energy security and the resilience of the economic and social sectors. More than half of the electricity is expected to come from local renewable sources, mobility will be low carbon, through the promotion of electric vehicles, especially in public transport, most of the seawater desalination facilities will start to work with wind and solar energy.</p>
<p>Cabo Verde Ambition 2030: Declaration of Commitment for Sustainable Development</p>	2020	<p>Validates i) The guidelines of the Strategic Agenda for Sustainable Development of Cape Verde and, based on the ambition that in 2030 Cabo Verde will be a consolidated and modern democracy, inclusive, a blue nation, digitalized, emerging and resilient, a circulation economy located in the Middle Atlantic integrated in ECOWAS with full employment and shared prosperity, a country useful to the world and a reference of pride for all and ii) The proposal of commitments for the Sustainable Development of Cabo Verde.</p>
<p>Sustainable Development Strategic Plan (PEDS II: 2022 - 2026)</p>	2022	<p>It operationalizes the Government Program of the X^o legislature and the Strategic Agenda for Sustainable Development Cabo Verde 2030 and above all it should drive changes and accelerate progress to fulfil the 1st cycle of Ambition 2030.</p>

Cabo Verde National Adaptation Programme of Action 2007-2012 (NAPA, 2007)[39]³⁹ Program National Adaptation Plan[40]⁴⁰ Plan	2007 2021	<p>The Cabo Verde National Adaptation Programme of Action 2007-2012 aims to increase the capacity of Cabo Verde resilience to climate change and climate variability in order to achieve the development objectives set in its Growth and Poverty Reduction Strategy Paper, through amongst other things, the promotion of integrated water resources management in order to guarantee water for the people, for the production of food, for the ecosystems and for the tourism industry.</p> <p>Recently the Cabo Verde's National Climate Change Adaptation Plan 2022-2030 (NAP CV) was developed, which lays the path for the country to minimize the impacts of climate change through planned and concerted actions at all levels and become a safe small island state, with all the necessary capacities to take advantage of the opportunities provided by climate change to become more sustainable, innovative and resilient.</p> <p>The proposed project is aligned with this plan and aims to test solutions that will enable the country to reduce its GHG emissions and that are more resilient, and thus, contributing to adapt to climate change effects/hazards.</p>
United Nations Framework Convention on Climate Change (UNFCCC) Third National Communication to the UNFCCC (2018) Convention National Capacity Self-Assessment Report	2018	<p>Cabo Verde 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 Third National Communication to the UNFCCC (2018)[41]⁴¹. 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.</p>
Minamata Convention on Mercury Minamata Initial Assessment Report[42]⁴² (2018)	2018	<p>The Minamata Convention on Hg became one of the first worldwide environmental agreements in the 21st century. It was adopted in 2013, and to date, 123 countries have signed the agreement. The convention aims <i>to protect human health and the environment from anthropogenic emissions and releases of Hg and the compounds and it sets out a range of measures to meet the objective?</i>. Recently Cabo Verde carried out its initial Minamata Assessment report as a clear signal for its commitment to ratify the Minamata Convention. According to the results of the initial report the biggest source of release of mercury to the environment is mainly through the use and disposal of products, waste deposition, waste incineration and open waste burning and informal waste dumping.</p>

Cabo Verde National Implementation Plan under the Stockholm Convention on Persistent Organic Pollutants (PoPs)		The Convention commits the signatory countries to take action to eliminate or reduce the production, use, export and import of POPs, to prevent the unintentional emission of these POPs into the environment, and to provide adequate disposal of their wastes and stocks.
Decree-Law No. 27/2020 approving the Legal Framework for Environmental Impact Assessment (EIA) ^[43] Law	2020	Approves the Legal Framework for Environmental Impact Assessment (EIA). This Legal Framework regulates the Environmental Impact Assessment of public and private projects likely to have significant effects on the environment. It regulates stakeholders and their related competences, the phases of the environmental impact assessment, the registration of consultants and the constitution of technical teams, as well as the fees.
Energy Sector/renewable energy policies, strategies and plans		
Electricity Sector Master Plan (PDSE)	2019	It is the structural document for the development of the Electric System, considering the main areas of the sector's development: spatial forecast of electricity consumption, new investments and reinforcements in transportation infrastructure, electricity distribution, structure of the production park (central location, size, energy sources and technologies) and network management, institutional structure and organization.
National Renewable Energy Action Plan (NREAP, 2015), the National Energy Efficiency Action Plan (NEEAP, 2015), and the SEforALL Action Agenda (SEFORALL)	2015	Documents endorsed by Resolution 100/2015, providing guidance on the country path towards 2030 regarding Energy Access, renewable energy and energy efficiency. These plans set up goals and targets for RE and EE and the respective measures to achieve those targets.
Law n° 102/VIII/2016 Code of Fiscal Benefits <i>(Modifies Law n° 26/VIII/2013)</i> Legislation	2016	Creates fiscal incentives for the use of RE technology. Establishes principles and rules applicable to tax benefits for investment (Investment Tax Credit by deduction of Corporate Income Tax (CIT) collection in an amount equal to 50% for RE production and manufacture and installation of RE equipment) and exemption from custom duties to registered industrial companies on materials incorporated in the production of goods or services intended for RE generation.

Sectorial Strategic Plan for RE (SSPRE) Plan	2012	Approved by the Resolution of the Council of Ministers n° 7/2012, lays the plan for renewable energy based on studies showing the available renewable energy sources in the country and identified the 'Renewable Energy Development Zones' (REDZ). The installation of RE equipment in REDZ does not require the completion of the ESIA process for licensing.
Article 9 of Decree-Law No. 56/2015 of October 17th Legislation	2015	Establishes the general rule applicable to the prevention, production and management of waste. It states that the entity responsible for " <i>the act of introduction of the vehicle in the national territory</i> " is responsible for managing the vehicle at its end-of-life.
Decree-law n° 46/2021 Legislation	2021	Establishes the principles and rules for the exercise of the activities of Energy Service Companies (ESCOs).
Overarching development strategies of relevance for electric mobility		
Electric Mobility Policy Charter (CPME) Charter Resolution No. 13/ 2019 on the February 1st 2019 Charter	2019	Establishes the country's strategic vision on the subject of Electric Mobility and communicates the main measures for guiding and creating the necessary conditions for the initial start-up phase, followed by the long-term massification of the use of electric vehicles in the country. It guides the Government's actions towards a coherent approach with the energy policy and the policy of the environment, mobility and public finance vectors. It is framed as an instrument to establish the country's strategic vision in this matter and to communicate the main measures that will guide the creation of the necessary conditions for the initial phase, followed by the long term massification of electric vehicles (EV) in the country, assuring the adequate development of necessary infrastructures, regulatory framework, and services offerings that allow any citizen or organization to have access to electric mobility solutions.
Cabo Verde E-Mobility Action Plan 2019-2035 (PAME)	2019	Identifies the actions to be developed in the short, medium and long term to achieve the objectives set out in the Policy Charter for Electric Mobility (CPME), grouped according to the three axes of intervention: Axis Electric Vehicle (EV), Axis Recharging Infrastructure (IR) and Axis Electric Energy (ENG). It identifies responsible bodies for its implementation, follow-up and monitoring of each action and the Key Performance Indicator (KPI) to measure the evolution of the Electric Mobility market. The gender assessment will be an important component to be taken into account during the implementation period of PAME.
Blue Economy policies, strategies and plans		

Blue Economy Charter		The Blue Economy Charter promotes the country's sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism. The charter is accompanied by the National Investment Plan for the Blue Economy and a Program for the Development of a Blue Economy in Cabo Verde. These instruments indicate that the country intends to reinforce the coherence and integration of public policies related to its maritime economy and the coordination for an integrated approach with other sectors such as transport, renewable energy, industry, tourism, trade, environment, agriculture, fishing and aquaculture, among other areas of social and human development. National Investment Plan for the Blue Economy and the Promotion programme are based on 3 pillars: (i) Investments (ii) Projects aimed at adapting existing elements (iii) New specific investments for the Blue Economy.
Charter		
National Investment Plan for the Blue Economy		
Plan		
Blue Economy Promotion Program		

2.2 Associated Baseline Projects

The following table highlights the associated baseline projects.

TABLE 4: ASSOCIATED BASELINE PROJECTS AT NATIONAL AND REGIONAL LEVELS

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
Rolling out the Common Assessment Framework (CAF) and establishing a CAF Resource Center (2nd phase) (UNIDO)[44]⁴⁴ National Project	2017-2020 EURO Trust Fund: EUR 300,000	Implementing & Executing Agency: UNIDO The project aims to contribute to the improvement of the business environment in Cabo Verde by promoting organizational learning in economic institutions. The immediate objective is capacity building for improved service quality of economic institutions within the context of the new Government reform. The Government wants to roll out this very systematic tool to improve the public-sector services and foster a mindset of quality, excellence, and entrepreneurship.	The principles of quality of management underlined in the CAF will be taken into account in the proposed project.

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
Sustainable energy access to manage water resources: Addressing the Energy-Water Nexus ^{[45]⁴⁵ National Project}	2017-2023 GEF grant: US\$1,826,072 Other co-finance: US\$14,949,551	Implementing Agency: UNIDO Executing Agency: MICE To overcome the low natural availability of water, desalination plants and underground boreholes are used to secure access to freshwater even though they require large amounts of energy to operate. In this regard, Cabo Verde is facing an increasing power deficit which is already hampering economic and social development. The project aims to bring about an alternative scenario that combines technical assistance for improving the existing regulatory and institutional framework and investment in RE systems for water pumping in rural areas and water desalination in urban areas. Besides the support to scaling up of efforts, the project will build technical capacity to install and maintain the RE systems for water pumping and desalination and will raise awareness among relevant stakeholders on the technical and financial feasibility of such interventions.	The proposed GEF/UNIDO project continue to engage with several of the key stakeholders of the GEF6 Energy-Water Nexus project. Lessons learnt from the implementation of the GEF6 Energy-Water Nexus were included on the proposed project design.
Formulation of the Industrial Policy / Diagnosis of the industry National Project	2017-2018 Budget: US\$96,600	Implementing & Executing Agency: UNIDO Overall, the project seeks to strengthen institutional capacity of the Government of Cabo Verde and private sector stakeholders with evidence-based diagnosis and benchmarking that will support the future design of industrial strategy and policy. More specifically, the project will perform a diagnosis of the present situation of the industry in Cabo Verde (Situation As Is) and identify recommendations for the implementation of the new vision of Industry in Cabo Verde (Situation To Be).	The proposed GEF/UNIDO project will take into account the findings of this report, specially the ones concerning the Fisheries, Energy and Transportation sectors.

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
West Africa Competitiveness and Quality Infrastructure Project (WACOQIP)[46] 46 Regional Project	2017-2023 EU Funding: EUR120 million	Coordination Agency: ECOWAS Commission Implementing Agency: UNIDO Strengthening industrial competitiveness of the West African priority countries through value chain development and an enhanced level of production, transformation and export capacities of the private sector (to be implemented under the framework of the 11th European Development Fund West Africa Competitiveness Programme).	The proposed GEF/UNIDO project will create synergies with this project.
Promotion of Electric Mobility in Cabo Verde - PROMAE (Financed by the NAMA Facility and Implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH) National Project	2020-2025 NSP NAMA Facility: EUR7,186,646 Other co-finance: EUR 17.7 million	Implementing Agency: GIZ Executing Agency: MICE/DNICE The Promotion of Electric Mobility in Cabo Verde (Portuguese acronym ?PROMAE?) aims to support GoCV in further developing and implementing its policy for the promotion of EVs over a period of five years in order to reach a significant market share of EVs by the end of the implementation period and place the country on track for the planned complete conversion of the vehicle fleet by 2050. The project is doing that through the implementation of a comprehensive approach addressing all barriers (technical, legal, financial, institutional) to the adoption and sustainable use of EVs by households, companies, public institutions and nongovernmental organizations (NGO).	The proposed GEF/UNIDO project will complement the PROMAE by promoting electric mobility through the deployment of electric batteries in different transportation vehicles ? of smaller type. Synergies and complementarity will be ensured by MICE/DNICE which is the executing agency for both projects.

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
CFI: Coastal Fisheries Initiative (Program) ^[47] ⁴⁷ (FAO, UNDP, UNEP, WB, CI and WWF	GEF Co-finance:	<p>Through the Coastal Fisheries Initiative (CFI), the GEF supports environmentally, economically and socially sustainable use and management of coastal fisheries. CFI consists of a combination of national and subregional projects, and innovative grant funding mechanism (Challenge Fund) and a global partnership, knowledge management and research mechanism for sharing experiences furthering effective fisheries management globally.</p> <p>CFI focuses on: (i) strengthening fisheries sector's policy, legal and regulatory frameworks to incorporate environmental, social and economic sustainability considerations; (ii) improving the capacity and capability of fishing nations, regional management bodies and empowering communities in sustainable management of fisheries; (iii) promoting public-private partnerships that enable responsible investment along the supply chain, fostering sustainable fisheries and sustainable development.</p>	The proposed project will create synergies with this programme and its activities in Cabo Verde, especially with its two (2) child projects that target Cabo Verde (described below in this table)

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
The Coastal Fisheries Initiative Challenge Fund: Enabling Sustainable Private Sector Investment in Fisheries (CFI-CF) (& CFI-CF Global Knowledge Competition (World Bank) Global	2018 - 2023 GEF grant: US\$7,873,394 Other co-finance: US\$33,000,000	<p>The CFI-CF project aims at ? preparing investment-ready packages for sustainable coastal fisheries development in Cabo Verde and funding for four selected projects: (i) Development of a refurbishment project for the Santa Maria pier in Sal as a nexus for safe and sustainable coastal fisheries/tourism activities; (ii) Pilot program for deep-sea shrimp fishery exploration; (iii) Fleet reconversion program for artisanal/semi-industrial fisheries; and (iv) Pilot program for a wholesale fishery auction system (?lota?) in the Praia Fishing Complex.</p> <p>The WB is also implementing the CFI-CG Global Knowledge Competition seeking coalitions among fishing communities, business and finance communities, and governments with innovative solutions that address overfishing and inefficiencies in coastal fisheries</p>	The proposed project will build synergies with this project, learning from the lessons learnt through its implementation and building on the results that this project has produced. The WB is one of the International Development organizations consulted at PPG stage and that will be engaged throughout the implementation of the proposed project.
Costal Fishery Initiative (CFI) - Delivering sustainable environmental, social and economic benefits in West Africa through good governance, correct incentives and innovation^[48]⁴⁸ (FAO/UNEP) Regional Project	2017 -2021 GEF Grant: US\$6,433,027 Other co-finance: US\$45,551,500	<p>This project aims to strengthen fisheries governance, management and value chains, through the implementation of an ecosystem approach to fisheries (EAF), of relevant international instruments and of innovative governance partnerships in three countries in West Africa (Cabo Verde, Cote d'Ivoire and Senegal).</p> <p>CFI in Cabo Verde has two pilot sites where FAO and partners carry out a number of activities to make</p>	The proposed project will build synergies with this project, so that it can learn from the lessons learnt through its implementation and build on the results that this project has produced to implement its proposed activities. FAO and UNEP are part of the International Development organizations consulted at PPG stage and that will be engaged throughout the implementation of the proposed project.

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
Promoting entrepreneurship in the Blue Economy (FAO) National Project	2022 Spanish Agency for International Development Cooperation: US\$167,200	Executing Agency: FAO The project aims establish a cooperation platform to promote entrepreneurship, train fishermen and fish sellers to ?promote the integration of the value chain? fishing and tourism, applying the principles of the Blue Economy, but also ensure greater ?autonomy of actors in the fisheries sector?. For that activities of ?awareness, communication, knowledge transfer and capacity building actions, ensuring that 40%of the total beneficiaries are women.	
Enhance capacities of CV in addressing the effects of climate change in key sectors of the Blue Economy (FAO through the GCF) National Project	The project is at approval stage. GCF Green Climate Fund: US\$496,932	Executing Agency: FAO Aims to assist the Government of CV in fully mainstreaming climate issues into the Blue Economy, and in implementing the priorities defined in the INDC and the NAPA (2007). Include the development of detailed investment plans that can be used to readily implement adaptation (and mitigation) actions relevant to the sectors of the Blue Economy.	Synergies will be created with this project. FAO will be one of the stakeholders invited for project consultation and meetings.
Hand in Hand (FAO)		Aims to improve governance including the coordination and monitoring of international support, by improving the value chain of fisheries targeting national markets and by creating decent blue jobs, all for the priority benefit of women and young non-graduates in connection with already existing fishing infrastructures	

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
Empowering communities for sustainable development through natural resource management and ecotourism and inclusive and participatory community management (UNDP)		Aims to build capacity of beneficiaries and the general population with greater knowledge of good practices in the innovative and sustainable blue economy and intra-community organization	
Managing multiple sector threats on marine ecosystems to achieve sustainable blue growth^[49]⁴⁹ (UNDP) National Project	2020 GEF grant: US\$3,787,864 Other co-finance: US\$22,327,788	Aims to strengthen the systemic and institutional capacity for reducing multiple threats to globally significant marine ecosystems and achieve sustainable blue growth in Cabo Verde.	The proposed GEF/UNIDO project will see how it can build on information generated by this UNDP project and see how it can contribute to it, specially to PC3 of that project that looks into sustainable fisheries management, in which e-mobility solutions can have a role. UNDP was engaged during the PPG and will continue to be engaged through the implementation of the project, ensuring in this way that synergies are created.

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
<p>GEF Small Grants Programme (SGP)[50]⁵⁰ (UNDP) Regional Project</p>	<p>7th Operational Phase: 2022 ? 2026 GEF Grant: US\$43,937,623 Other co-financing: US\$45,957,000</p> <p>6th Operational Phase:</p>	<p>The GEF SGP has been supporting climate change mitigation, biodiversity, capacity building, chemicals and waste, climate change adaptation, international waters and land degradation related projects in Cabo Verde for more than one decade now. Since it started in 2010 it has implemented 129 projects[51]⁵¹.</p> <p>Under the 6th Operational Phase, and as of 2021, the GEF SGP in Cabo Verde has been co-financing an artisanal fishing vessel electric mobility project promoted by the Salamansa Fishing Association, based in S?o Vicente, Cabo Verde. This project consists of a pilot initiative to implement an electric propulsion system in an artisanal fishing boat in the Salamansa fishing community to increase sustainability, presenting the opportunity for evaluation of efficiency and safety in a CV scenario. As a source of clean energy, a small photovoltaic system will also be installed to charge the two (2) motors? batteries. The motor and associated equipment were</p>	<p>Discussions were held with GEF SGP project and Salamansa Fishing Association and it was agreed that the two project could benefit from collaboration with each other.</p> <p>Sharing of lessons learnt/ experience from the implementation of both projects would be shared. Members of the Salamansa Fishing Association will be invited to project meetings at the inception phase of the proposed project as well as throughout the project when that makes sense.</p> <p>? Capacity building of the proposed GEF/UNIDO project will be extended to include the GEF SGP project experience, data and strategy.</p> <p>? Data collected by the GEF SGP project will be used for the feasibility assessment of the pilots to be implemented by the proposed GEF/UNIDO project.</p> <p>? The potential to integrate battery swapping with S?o Pedro Pilot site of the proposed project will be analysed.</p> <p>? Collaboration on safety measures and communication (an agreement to look out for each other and potentially rescue each other?s fishermen by taking them a battery in case they run out in the middle of the sea).</p>

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
		received and installed in September 2022. The project was visited at the PPG stage in November 2022 and the e-vessels have been used in test mode, to collect data for the preparation of the Feasibility Study (finished in February 2023) The project differs from the proposed GEF/UNIDO project, as it is to analyse the impacts of using electric vehicles on the price of fish instead of traditional fossil fuel ones, and does not include battery swapping.	? To strengthen the design of the proposed project, a leasing model includes an expert agency that is responsible for the maintenance and upkeep of the batteries. This expertise, along with automated monitoring system of the battery swap stations, is expected to lead to a much longer life for the swap batteries than would be expected if the batteries were under private ownership, and subject to private maintenance regimes. A leasing arrangement also removes the cost of the battery from the original vehicle purchase, removing the high premium cost barrier normally associated with electric vehicles purchase decisions.
UNDP Cabo Verde Accelerator Lab (UNDP) National Project	On-going	Aims to stimulate the adoption of digital tools and promote technology-based solutions in key areas of Blue Economy, such as fisheries and aquaculture, renewable energies, aquatic ecotourism, maritime transport and safety.	The project will leverage synergies with this accelerator lab through its implementation.
Supporting Sustainable Inclusive Blue Economy Transformation in AIO SIDS^[52]⁵² (UNDP) Regional project	Project Concept Approved Date to be defined Total: US\$72,278,891 GEF Co-finance: US\$9,003,847 Other co-finance: US\$63,275,044	Implementing Agency: UNDP Executing Agency: UNOPS This GEF/UNDP Project aims to support the development and realization of sustainable blue economies in Atlantic and Indian Ocean SIDS through improved governance, national Blue Economy demonstrations, and knowledge management. This project is still and concept stage.	Links will be established to leverage synergies regarding the deployment of the pilot projects and the strengthening of the legal and regulatory framework.

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
West Africa Circular and Resilient Tourism for Coastal Destinations (WB) Regional Project	2022 WB PROBLUE	The overall aim of this project was to understand the challenges to, and opportunities for, increasing circular economy strategies and practices, with particular focus on the tourism sector and single use plastics Support to sustainable coastal tourism practices by improving the knowledge on the state of Blue Tourism, elaborating a mapping of tourism stakeholders and coordinate with country teams to engage local public and private stakeholders.	Information generated by this project was used in the design of the proposed GEF/UNIDO project. The WB will be engage in consultations and meetings of the proposed project to ensure alignment of activities.
Resilient Tourism and Blue Economy Development in Cabo Verde (WB) National Project	2022-2027 Budget: US\$35 million	Executing Agencies: Ministry of Culture and Creative Industries and Ministry of the Sea, Ministry of Finance and Business Development, Ministry of Infrastructure, Territorial Planning and Housing, Ministry of Tourism and Transports This WB project aims to increase diversity and resiliency in the tourism offering and small and medium enterprise (SME) participation in tourism-related value chains in targeted destinations	Links will be established to leverage synergies regarding the deployment of the pilot projects and the strengthening of the legal and regulatory framework. The Ministry of the Sea is a key stakeholder of both projects ensuring cooperation between the two.
Country Programming support and sustainable tourism planning for Cabo Verde (UNIDO)[53]⁵³ National Programme	Project Concept Approved GCF grant: 499,379	Executing Agency: UNIDO This project seeks to identify climate change priorities, including a pipeline of projects that the country seeks to develop with GCF.	Synergies will be created with this project to ensure that amongst the pipeline of projects to be developed under this project electric transportation/ battery swapping and usage to power tourism activities (e.g. small tourism vessels) are considered and transported.

Name of the Programme/ Project	Duration Period /Budget	Short Description of the Programme / Project	Contribution (lessons learnt) / synergies with the proposed Project
ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE) by UNIDO and the Austrian and Spanish Governments Regional Project	Established in 2010 and in operation	In 2010, the ECOWAS countries decided to establish ECREEE ?a unique regional agency in sub-Saharan Africa? to improve the access to modern, reliable and affordable energy services and to accelerate the uptake of renewable and energy efficiency technologies. ECREEE's activities include policy development, capacity building, awareness raising, knowledge management as well as business and investment promotion.	The project will build on ECREEE's regional expertise in capacity building and policy development to build national capacity for the integration of e-mobility technologies in the transport sector. ECREEE will also be involved in consultation and meetings of the project

3) THE PROPOSED ALTERNATIVE SCENARIO WITH A BRIEF DESCRIPTION OF EXPECTED OUTCOMES AND COMPONENTS OF THE PROJECT;

The proposed alternative scenario is to implement a series of project components and activities that seek to test and provide combined innovative low carbon energy and transport solutions for energy and transport provision for remote villages ? villages where there is no access to electricity from the national grid and transport requirements within the village are small-scale with and unreliable supply of engine fuels. These new solutions are expected to address the lack of access to electricity and mobility issues at the same time that they make these villages less reliant on fossil fuels and more resilient to climate change. In fact, the project is a response to many drivers of change in the energy and transport sector, including climate change, fuels costs energy security, air quality, climate change resilience and improved mobility, that makes use of the technology development in the field of battery technology. Motors and power electronics, networks and communication, smartphones, and GPS/satellite technology.

These new solutions are expected to provide a better quality of life in remote villages. For example, they include home battery swapping to provide ?last-mile? electricity supply ? enabling electricity to reach those places where local grids do not, and where solar can be unreliable for a variety of reasons. Such electricity is an enabler for better communication, and for education ? important needs for younger people, and important to provide if a village is to avoid losing a high proportion of its younger generation to urban areas. Swap batteries are also likely to provide a more reliable electricity source during and immediately after extreme weather events that are projects to happen more frequently and are expected to be more severe in the future.

Furthermore, the new solutions also include electric small-format vehicles, which can provide better connectivity within the wider village and with neighboring villages. The new transport solutions also

include vehicle sharing ? responding to the low utilization that vehicles often see, particularly when based at a remote village, and the greater accessibility and improved affordability that can be brought about through the use of vehicle share arrangements.

The proposed Project tests the combination of possible solutions in two (2) villages ?Monte Trigo and S?o Pedro?, so to contribute to the vision of what a remote village in 2040 might look like and might need in terms of energy and transportation solutions. This vision, which is depicted in Figure 1, includes:

- The use of solar generation as the main energy source for the village, being primarily provided by a centralised solar generation plant that is on one side of the main village hub (as a centralised plant has been found to be more cost-effective and more reliable than individual household solar). It feeds houses within the close village hub via short-run underground distribution (as overhead wires have proved to be a poor option in the more severe storms that CV now experiences) and provides electricity for:
 - Chilling necessary for fish and other food preservation (again, using plant based at the solar generation site).
 - Charging swappable batteries that are then used for:
 - Power provision for low-power premises power on the village?s small electricity supply network. This might include premises with no access to electricity and/or unconnected premises with small solar top-up systems that decide to use battery swapping system as this provides a more robust backup, better management of the batteries, and a lower entry-cost solution).
 - Charging battery-swap transport, using ?low-capacity?, ?high-capacity?, and ?high-capacity marine?, low-voltage battery systems (all with the same standardized charging connector). These transport options include:
 - E-bikes, including cargo-bikes, and e-scooters that are used within the inner village and on the tracks around the greater village area to transport people and goods.
 - Electric vessels ? used for fishing and for ferrying passengers to and from nearby fishing villages and transport hubs connecting with other CV destinations. Several e-vessels also have onboard solar generation.
 - Direct charging of larger, electric, land-based vehicles and marine vessels which provide freight and passenger services to and from the village.
 - ?The solar generation, refrigeration, battery charging and battery swap plant are shared village services and the energy services related to these plants, including battery charging and swap services, are managed by the village in partnership with an equipment and system provider. This arrangement also ensures a centralised arrangement for providing trained technical support.
-
- ?The proposed pilots aim to introduce 5 e-outboards in Monte Trigo and 15 in Sao Pedro. In addition, it is expected that around 540 vessels are expected to indirectly benefited from the two pilots through early copy-adoption to 20%-30% of the artisan fishing fleet.
- ?While targeted Sao Pedro village is connected to the grid and Monte Targo has electricity access through a solar PV power plant, the use of swap batteries is particularly beneficial for integrating with local electricity supply network when the Community Batteries Leasing/Renting Centre are aggregated resulting in a significant amount of storage that can be played in concert with the local supply of electricity to take advantage of any excess electricity available once sufficient or all of the batteries

available in the charging station have been fully charged to achieve more stable supply of electricity, reduce energy cost and potential use of batteries for a variety of appliances. For example in Monte Trigo, although a solar PV power plant exists, the capacity of batteries are limited and when the days with low solar radiation continues, so the production is limited to diesel generators which are more costly and environmentally harmful. Plus, the capacity of electricity production is not enough to cover potential demand of electricity for ice making and home appliances such as lighting, phone charging, refrigeration, and electric cooking. Through setting up a battery swapping station with a solar PV system, the local community can increase their capacity of ice-making that benefits local fishing sector and stabilize the electricity supply also for household and tourist hotel (and for a desalinization plant to be developed). Likewise in Sao Pedro, other than for the vessels, there are huge demands on cooling and ice making system for fish conservation/transport, which are currently not developed due to the electricity cost.

- ? An existing solar PV power plant in Monte Trigo is operated by Aguas de Ponta Preta (APP), Spanish company supplying power and water. There is a local operator stationed in Monte Trigo to maintain the plant. The association of Monte Trigo community and a UNIDO's national project coordinator will regularly exchange information with the operator in order to ensure the close coordination. Likewise, the association of Fishers in S?o Pedro and the project team will effectively involve the existing operator of the electricity network in S?o Pedro, Electra SA, a public electricity and water company based in Mindelo, to maximize synergies between the project and the existing infrastructure for the stabilization of the local grid. To this end, the project will ensure that these operators will be consulted for the roadmap definition and directly engaged in the training workshops. They will also be engaged during the implementation phase through the participation of specific private & public sector actors and electric utilities in stakeholder meetings.

- ? As a comparison with a vehicle-to-grid (V2G) model, V2G model does not make practicable sense for in-situ batteries of small-format electric vehicles ? the individual battery sizes are too small to make a significant difference and the integration equipment required for each vehicle is more costly than the electric vehicles themselves. The advantages and the reason why the battery-swap business model is the most attractive from both the financial and technical point of view for integrating with local electricity supply network is that the (small) swap batteries are aggregated when they are in the battery swap station resulting in a significant amount of storage that can be played in concert with the local supply of electricity. The charging rate used can also be increased or decreased according to the availability of local generation, and export to boost voltages in the local network, for example, it's also much easier when dealing with an aggregated amount of electrical energy storage to do this.

- ? In addition, battery swapping has become standardised in several countries, and this is the reason why it is expected that a short time frame can be met for both developing the feasibility study and deploying a procurement exercise for a battery swap-based project. Furthermore, the combination of modern battery technologies, and cheap communications and electronics, has introduced battery swapping to small-format electric vehicles such as two- and three-wheelers (e.g. in Taiwan). There are many benefits for battery swapping, especially in environments where the target users are not so familiar with new technologies. These benefits include removing the concern about the cost and durability of the modern battery from the unformed purchaser and giving this responsibility to an agency that has particular expertise in the operation and maintenance of modern battery systems. This not only removes significant barriers for a potential purchaser (the barrier of unknown performance and

unknown durability, and these risks are often too great to surmount. The removal of the upfront cost of the battery and switch to a pay-as-you-go battery service model is also normally more affordable where the vehicles involved have high utilisation), it is also expected to return far longer services lives for the batteries, and assign one agency to the responsibility of end-of-life management of the batteries (also noting that having when agency looking after mini batteries provides many more opportunities for refurbishment, repurposing and reuse of batteries).

- ?Moreover, rather than a V2G model, battery swapping enables multidimensional projects that integrate e-mobility with electricity supply. For example, the battery swap stations (where multiple batteries are charged at one time) can be operated as virtual power stations with the charging rate used increased or decreased according to the available power in the local network, or even export electricity from the batteries to the local network to maintain voltages in the grid, etc., and this done in concert with intermittent electricity supplies such as those that gotten from renewable energy generation. Therefore, a battery swapping stations so deployed can support the local grid network, including supporting a higher proportion of renewable energy on that local network than would otherwise be possible.

- ?On top of that, the expanding flexibility of battery swapping is also advantageous (e.g. in India there are many new models of battery swap capable two- and three-wheeled electric vehicle). Plus, the availability of a battery swap station will enable access to modern battery technologies for household electricity distribution, and open up other opportunities; enabling a far wider electrification of the local community than just vehicles.

- ?It is also noteworthy that the proposed battery swapping model is not a repeat of the battery swapping programmes that were used for passenger cars around 10 years ago - experience that seems to still haunt modern battery swapping projects. Battery swapping of small-format vehicles has become established and has proved to be commercially attractive in Taiwan, Indonesia, Cambodia, and India to name the countries with the most prolific battery swap programmes already in place. The use of electric outboards for small craft is also becoming an established market sector.

- ?Many of the small vehicles used for passenger and goods transport around the village are shared vehicles accessed via smartphone and billed for according to time in use and distance travelled. As for the main energy-related assets, the shared vehicles are managed by the village in partnership with an equipment and system provider. Some villagers also own their own vehicles and access the battery swap services for the operation of these vehicles. Likewise, marine electric outboards and marinized batteries are available on a shared asset basis.

- ?Furthermore, the proposed project concerns low voltage (48V DC) electric propulsion of small marine craft, which is normal practise for this type of craft for the batteries to be removed from the vessel for charging. As fishing boats are sometimes used during sunlight hours, it makes sense to utilise the generation of any on-land solar generation during this time by charging a second set of batteries, which could then be used to swap out the vessel's depleted batteries. Hence battery swapping makes sense whether carried out in a private or a BaaS capacity.

- ?For road vehicles, the equipment involved in a battery swap system (i.e., the electric vehicle with a battery connector, batteries with matching swap connectors, additional batteries that are charged while others are in use, and battery swap stations), do come at a premium over simple ?cable-charging? of vehicle batteries (i.e., where the charging of the electric vehicle's battery is from a power-supply/charger plugged into a mains socket-outlet). This means that a user who has a daily commute within the range of their electric vehicle's onboard battery would find it cheaper to simply cable-charge

their electric vehicle at home (i.e., and not have the additional equipment involved in battery swapping).

- However, when the full life of an electric vehicle is considered, other factors come into play. A common barrier for many would-be electric vehicle buyers is the high upfront cost, of which the cost of the battery is a major component. Another is anxiety over battery life – the fear that battery degradation will erode the vehicle's value or not provide the required performance. Yet another is perceived environmental concerns, with the problem of disposal of the battery at the end of its life at the forefront. Battery swap arrangements can entirely eliminate these factors. For example, a battery-as-a-service (BaaS) provider often enables the swapping of batteries through some form of leasing arrangement, and this not only eliminates a significant part of the upfront purchase cost of the vehicle, but also wholly alleviates concern over battery life as well. The BaaS service provider can use their expertise to extend the life of the battery (including through providing quality maintenance of the batteries), and the service provider would also accumulate an aggregated supply of post-vehicle batteries, which is expected to result in many more repurposing opportunities. The service provider's battery stewardship is also expected to continue through to the end-of-life (EOL) recycling or disposal of the batteries, representing far more environmental certainty than for a battery under private ownership. At present, no monetary value is assigned to any of these benefits.

- In the case of road vehicles, access to convenient battery swap stations is also expected to reduce 'range anxiety', although this convenience comes at a cost, as both more battery swap stations are required to cover a wider geographical area, and more batteries are also required to be in circulation so that there will be batteries ready at those stations. An assessment of battery swap E2Ws in the Lao PDR carried out for GGGI recommended there to be three batteries in circulation for every E2W.

- The proposed marine application of battery swapping for this project differs significantly from the typical 'free-ranging' E2W use. Rather, for this project, the vessels will only access one battery swap station, reducing the significant costs associated with the supply of many battery-swap stations of a free-ranging road-vehicle battery swap arrangement. The number of batteries in circulation can also be significantly reduced without compromising the availability of the fishing vessels. As a result, the cost of the supporting battery swap infrastructure is expected to be around one-fifth of that required to support free-range road vehicle use (a cost reduction in line with the reduction in the number of swap stations and batteries required). Further, the aggregated control of all batteries in a battery swap station enables the battery swap station to be used as a virtual power plant, with charging of the batteries carried out in a way that makes the most of the available solar generation capacity available. With more sophisticated control, the battery swap station can actually enhance the quality of power in the local electricity supply network.

- The result of increased utilisation of solar assets, minimised battery-swap equipment through dedicated battery swap stations, the potential to increase the life of the batteries, and the expectation that the EOL battery management will be more robustly provided through the stewardship of the battery swap service provider, the use of battery swapping becomes highly favoured over private cable-charging of batteries. What's more, battery swapping is still at an early stage of development, and technology advances (including those that reduce the cost of the hardware and software involved) and other improvements are expected to enhance the case for battery swapping further: in short, the advantages are such that battery swapping is expected to become a significant feature in the future provision of small-format electric vehicle mobility (both on-road and marine).

•?To best prepare for this future, the project needs to pave the way for demonstrating battery swap technology now, so that the country can become familiar with the technology, including providing a means by which the country can both develop the supporting capability required and gain the experience necessary to plan for future battery swapping. The proposed demonstrations that the project comprises are designed to do just this; setting the country on a path of the normalisation of battery swapping technologies.

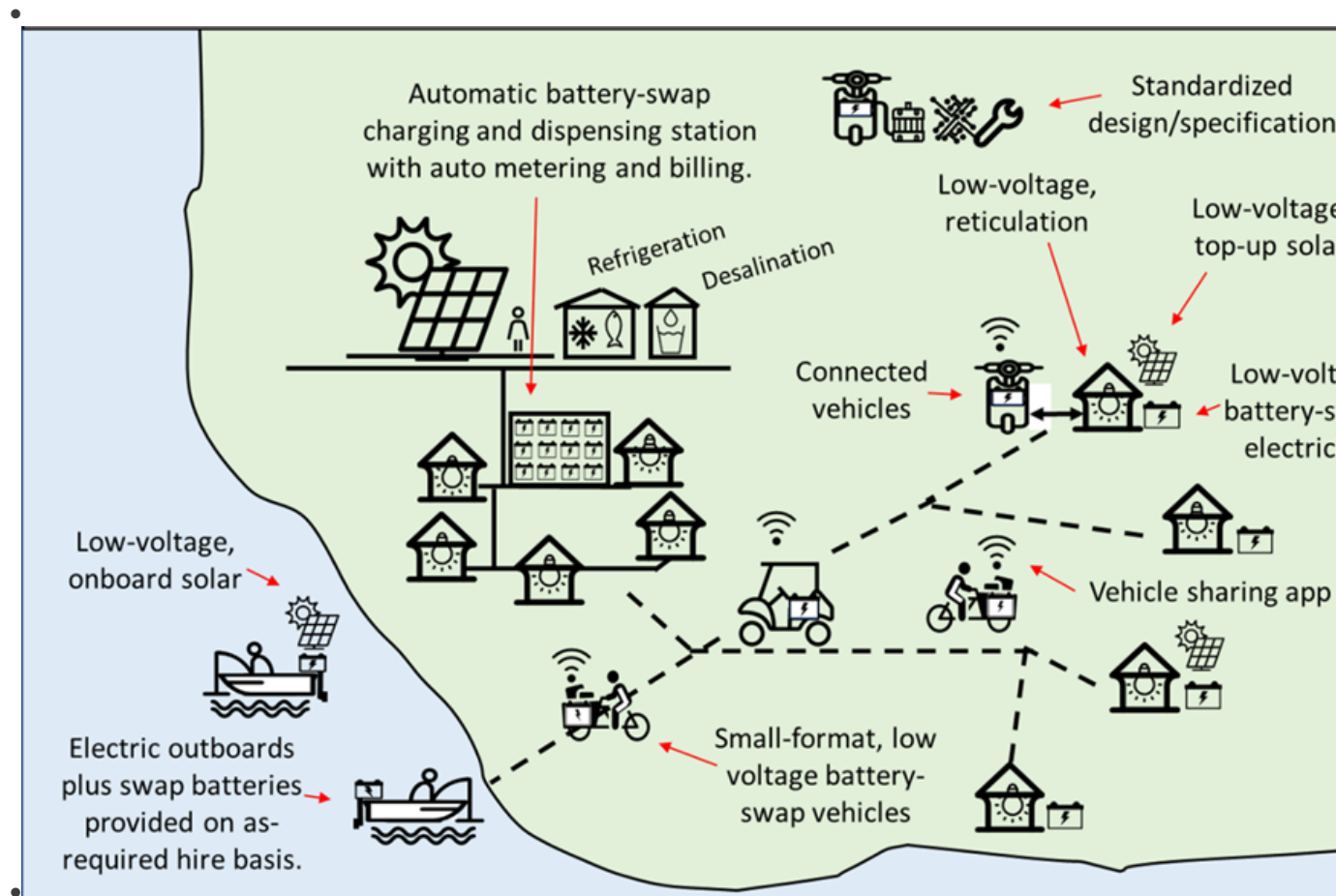


Figure 9: Elements of a Remote Village's Energy and Mobility System in 2040

As such, the proposed project aims to best prepare the country for the energy- and transport-related elements of this vision through filling gaps in understanding related to them (as these would otherwise likely present barriers to their adoption). The GEF financing will provide the necessary catalytic support to enable the groundwork for the deployment testing the identified combined solutions, its supporting business models and strengthen the legal and regulatory framework of the country with regards to e-mobility, reducing the countries GHG emissions and contributing to energy security and reliability and to mitigate and adapt to climate change.

The proposed Project is aligned with the updated with GEF-7 *Climate Change (CC) Focal Area Strategy Objective 1: Promote innovation and technology transfer for sustainable energy breakthroughs through electric drive technologies and electric mobility (CCM-1-2)*. The project will demonstrate finance low-carbon technologies and mitigation options and promote integrated low-emission transport, catalysing technology innovations towards scale, whilst counteracting environmental impacts of air and ocean pollution through the transport and fishing sectors.

In order to reach the project's objective, four project components (PC) are proposed to be implemented:

Project Component 1 (PC1): Policy and institutional support to promote low-carbon maritime mobility solutions

Project Component 2 (PC2): Support the supply of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions and related technologies

Project Component 3 (PC3): Stimulation of the demand for electric battery services

Project Component 4 (PC4): Monitoring and Evaluation

The following figure shows the Theory of Change underlying the proposed Project. It shows the barriers and paradigm that the Project aims to address as well as the interventions, expected outputs, outcomes and impacts to be implemented by the proposed Project.

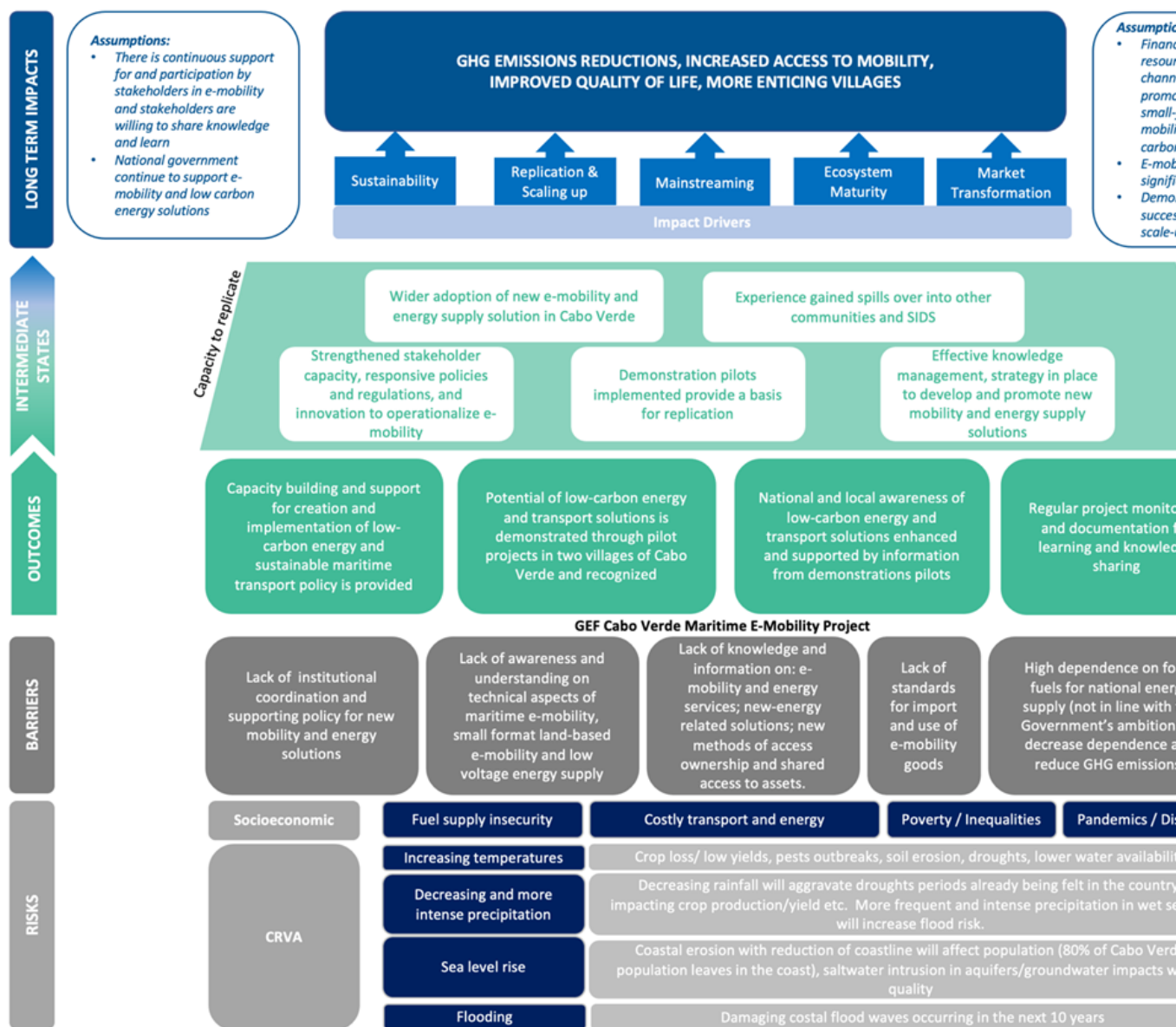


Figure 10: Theory of Change (TOC)

PC1: Policy and institutional support to promote low-carbon maritime mobility solutions

In order to reduce GHG emissions related to transport as well as increasing the share of renewable energy in the energy mix, the Government of Cabo Verde has stipulated the promotion of electric vehicles (EV) as one of its key strategies. The country's rate of fossil fuels importation is unaligned with the Government's ambitions. Following the decentralization policy started by the central Government in 2010, the responsibility for transport was transferred to the municipalities, which

affected the collaboration between stakeholders at national and local levels. Cabo Verde suffers from an uncoordinated and inadequate transportation policy.

The development and growth of low-carbon maritime transport solutions in Cabo Verde requires the development of an appropriate framework. PC1 aims to build up the necessary national framework for maritime e-mobility, with activities on three major axes: governance, capacity-building and scale-up.

Outcome 1.1: Capacity building and support for creation and implementation of low-carbon energy and sustainable maritime transport policy is provided

Output 1.1.1: Sustainable Maritime Transport Unit (SMTU) is established

Activity 1.1.1.1: Establishment of the SMTU and its operationalization

There is no specific entity with the mandate for supporting maritime mobility in Cabo Verde, the National Directorate of Industry, Trade and Energy (DNICE, from the Portuguese acronym of *Direcção Nacional da Indústria, Comércio e Energia*) has taken the lead on e-mobility in general, due to its connection with energy consumption. However, there is a need to promote coordination, adequate policy creation applied to maritime mobility and disseminate information across the multiple stakeholders to promote the adoption of e-mobility solutions in Cabo Verde's maritime sector.

Thus, the proposed **Project will establish the Sustainable Maritime Transport Unit (SMTU), hosted by the Ministry of Industry Trade and Energy (MICE, from the Portuguese acronym of *Ministério da Indústria, Comércio e Energia*) through the DNICE**, that will host meetings on a regular basis and will bring together representatives of: (i) national public sector institutions (Directorate of Marine Resources, Ministry of the Sea, National Blue Economy Coordination), (ii) academic/research institutions and centres (CERMI, IMAR, INDP, ECREEE and UNICV), (iii) local fishing associations and other associations (Salamansa Fishermen's Association, Association of Monte Trigo Community (AGRIPESCA) and Association of Fishers in S.º Pedro) and (iv) NAMA-funded support project *PromAE*. Depending on the issues to be discussed and analysed other stakeholders will be invited to attend to the meetings, such as financial institutions, NGOs, CSOs etc.

This Unit will coordinate and support the following activities:

- ? Promote the maritime transport and the blue economy dialogue between the relevant public and private sector stakeholders, ensuring coordination.
- ? Disseminate information and knowledge on maritime transport and e-mobility, and how that will contribute towards the development of the sectors and GHG emission reductions.
- ? Share guidance and technical information between the strategic level and the operational level of the Unit.
- ? Identify gaps and develop recommendations for creation and enhancement of low-carbon energy and sustainable maritime transport policy.

? Discuss, review and validate the Roadmap developed under Activity 1.1.3.1 to be in line with the Cabo Verde's Nationally Determined Contributions, Electricity Master Plan and the Blue Economy Program and Investment Plan, as well as with other relevant strategies and policies.

? Encourage the integration of gender equality in maritime e-mobility as well as of environmental and social considerations.

It is envisaged that **the SMTU will be created in the beginning of Y1 and hold at least two (2) meetings per year from Y1 to Y4, totalising at least eight (8) meetings over the Project's period of implementation. These meetings are expected to be half day meetings** to give the members the opportunity to discuss needs for improvement of the legal and regulatory framework in place, as well as to share experience on the implementation of the developed policies and regulations. This will allow the project to adapt the developed and improved policies to the changing environment.

A strong coordination effort will be needed to organise and guide the SMTU work towards the contribution to the creation and implementation of low-carbon energy and sustainable maritime transport policy that is necessary for the proposed Project to deliver on its objective. With this in mind, establishing an improving mechanisms for synergy building, information sharing, shared awareness and advocacy is advisable. The mechanism may comprise:

? Conducting scheduled meetings/fora among SMTU members (fixed and invited) considering the following suggestions:

- o Each participating institution/entity should select two representative individuals to attend the SMTU meetings as well as one or two replacements if the appointed individual cannot attend. This will be done in order to make sure that there is continuity of the individuals assigned to the Unit throughout the project duration and to avoid losing knowledge, information and context due to changes of individuals within the organizations.
- o The SMTU host (DNICE) supported by the PMU should be responsible for scheduling meetings and informing members about upcoming dates.
- o The SMTU work should be coordinated by DNICE with support from the PMU. 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. The results should be discussed in the following meeting to identify any possible delays, hurdles, or changes.
- o Meeting minutes / forum proceeding should be created each time the SMTU meets including information on where the meeting was held, the people present, and identification of next actions. This is useful to avoid future misunderstandings on allocated responsibilities. They should be distributed to all the attendees and absent members.

- o Creating a communication protocol to be followed by the STMU members.
- o Sharing the outcomes/actions of the STMU with the public through the Online Platform established in Activity 3.1.2.1.

? 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:

- o Strong commitment and integrity, ethical values, and the rule of law.
- o Openness and comprehensive stakeholder engagement.
- o Defining outcomes in terms of sustainable economic, social and environmental benefits.
- o Determining the interventions necessary to optimize the achievement of intended outcomes.
- o Developing the capacity of the entity, including the capability of its leadership and the individuals within it.
- o Managing risks and performance through robust internal control and strong public financial management.
- o Implementing good practices in transparency and reporting to deliver effective accountability.

The proposed Project will encourage the participating institution to the selection of women as their representants to participate in the SMTU, in order to promote gender equality. Also, the host of the Unit (DNICE) will seek guidance and recommendations from the Cabo Verdean Institute for Gender Equality and Equity (ICIEG, from the Portuguese acronym of *Instituto Cabo-verdiano para a Igualdade e Equidade de Género*) on how to better integrate gender aspects into the project activities and respective deliverables. The ICIEG will be invited to attend the SMTU meetings when needed.

Once outputs start to be generated by the proposed Project the PMU and relevant sub-contracted experts will be invited to present them or the activities being put in place to arrive at those results to the STMU, seeking comments and recommendations for improvement. The SMTU members will be key stakeholders of the proposed Project and will participate in some of the project activities as well as benefit from them. Thus, SMTU members will be responsible for disseminating information and knowledge generated by the proposed Project (e.g., project information, project deliverables/results etc) within their organization and create a link within their electronic platforms to the Electric Mobility Online Platform created by this project in PC3.

It is envisaged that through the joint participation and discussions enabled by the SMTU strong and sustainable linkages between stakeholders at national and local levels for the development of maritime

e-mobility are created. Once the proposed Project is completed, the established SMTU will be maintained and kept in operation by DNICE, as its operation will be part of the Roadmap activities to be developed under Output 1.1.3.

Activity 1.1.1.2: Conduct one (1) training session on low carbon energy and sustainable transport solutions for the SMTU members (with 50% women participation and a 30% youth participation)

The proposed Project will strengthen the capacities of relevant stakeholders to accelerate uptake and growth of maritime e-mobility in Cabo Verde. For that it will organize one (1) training session for the SMTU members on the subject. This training session will provide information and raise awareness on e-mobility and its application on the maritime sector as well as how to integrate e-mobility policy within the maritime sector. The main aim of this training session is to raise awareness of SMTU members regarding maritime e-mobility options that could be applied in Cabo Verde and provide the necessary knowledge to allow them to develop recommendations for creation and enhancement of low-carbon energy and sustainable maritime transport policy as well as review the roadmap to be developed under Output 1.1.3.

This training session will be a two-day hybrid workshop with options to virtually/physically participate, allowing the participation of all SMTU members. **This activity will be led and implemented by qualified professionals that will be sub-contracted to deliver the training session with support from the PMU. The training section is supposed to take place in Y1, ideally just after the establishment of the SMTU and back-to-back to one of SMTU's meetings.** The subcontractor providing the training should develop training materials to be shared with the attendants and made available on the Electric Mobility Online Platform as part of the knowledge materials produced under the proposed Project. The developed materials will adhere to the Project's Communication Strategy (see Output 4.1.1).

Output 1.1.2: Capacity development of interested government agencies and other institutions is provided

Activity 1.1.2.1. Mapping of relevant institutions and capacity building needs assessment

During the PIF and PPG phase, consultation with stakeholders highlighted lack of information and capacity as one of the key barriers to the uptake and growth of maritime e-mobility in Cabo Verde. Stakeholders referred that capacity building of the different government agencies and other institution in Cabo Verde is vital for successfully meeting the net-zero emissions as well as greater accessibility and mobility targets. It is essential that the relevant institutions have a clear picture of the gaps that need to be addressed in order to identify actions that will potentially bring positive impact and stimulate the maritime e-mobility sector in Cabo Verde. Thus, **a stakeholders mapping exercise will be performed to identify relevant government agencies in Cabo Verde that need to be included in the capacity building programme developed under Activity 1.1.2.2.** The SMTU members will be automatically considered as relevant government agencies in the mapping exercise, as they will be also invited to attend to this capacity building course, which is envisioned to complement the training section provided under Output 1.1.1, by providing a deeper understanding of e-mobility, its importance,

solutions and additional benefits generated from its adoption for both the energy and maritime transport sector.

Following the results of the stakeholders mapping exercise, **a capacity building needs assessment will be carried with the identified government agencies and other key stakeholders to identify the training needs that need to be tapped** so to create this critical mass of people that will then have the information and knowledge on low-carbon energy and maritime e-mobility transport solutions adequate for Cabo Verde.

The capacity building needs assessment should be gender-responsive when identifying:

? Current capacity (technical and soft skills) of identified stakeholders, analyzing as well whether the current capacity of women and men, as well as youth is different.

? Desired levels of capacity (technical and soft skills) of identified stakeholders, analysing as well whether the desired capacity of women and men, as well as youth is different.

? Gaps between the current and desired capacity (technical and soft skills) of identified stakeholders, analysing as well the capacity gap of women and men, as well as youth.

? Training needs with regards to gender and youth dimensions, such as gender awareness and knowledge on gender mainstreaming as well as youth engagement.

This activity is envisaged to take place in the first semester of Y2 and will be guided by the PMU that will sub-contract this activity to ensure impartiality for the selection of stakeholders that will undertake the capacity building programme. **The results of the stakeholders mapping, and capacity building needs assessment will inform the development of Activity 1.1.2.2 and will be published as a report on the Electric Mobility Online Platform (Output 3.1.2).**

Activity 1.1.2.2. Design of the capacity building programme and development of training materials tailored for the several government agencies? needs in Cabo Verde

Once the results of the stakeholders mapping, and capacity building needs assessment are published, the modules of the capacity building programme will be designed, and training materials will be developed. The capacity building programme will be directed to the identified institution, with a specific focus on government agencies and the SMTU members.

It is envisaged that the capacity building programme will be divided in two (2) categories: (i) Category 1: Capacity building modules that are applicable to all stakeholders and (ii) Category 2: Capacity building modules that are specific for a group of stakeholders.

Amongst other subjects, the capacity building modules and respective training materials will include:

? Maritime e-mobility as an opportunity to reduce oil import and improve energy security as well as reduce GHG emissions.

- ? Development of appropriate legal framework to stimulate important private sector investment.
- ? Identification of technologies that can be adopted in the maritime e-mobility.
- ? Encouraging supporting service that can stimulate the maritime e-mobility.
- ? Establishment of funding methodologies and business models adapted to the different characteristics of maritime e-mobility.
- ? Gender and youth mainstreaming.
- ? Environmental and social safeguards mainstreaming.

Once the modules of the capacity building programme are identified and assigned to its respective Category 1 or 2, the training materials will be prepared. All training materials should be gender-responsive and include a compilation of bibliographic references, guidelines PowerPoint presentations and other training materials as applicable. All developed materials will follow the project branding and Communication Strategy guidelines.

This activity will be guided by the PMU and is envisaged to be developed by the same subcontractor engaged in the implementation of Activity 1.1.2.1 and should take place in the first semester of Y2. It is envisaged that CERMI and ECREEE will be engaged in the design and delivery of the capacity building programme and development of training materials by the sub-contracted team so that they can then use it for further training provided by them. The developed modules and training materials will be delivered in Activity 1.1.2.3.

Activity 1.1.2.3: Conduct at least two (2) capacity building/training sessions on low carbon energy and sustainable e-mobility solutions (with 50% women participation and 30% youth participation)

The proposed Project will strengthen the capacities of stakeholders regarding low carbon energy and sustainable e-mobility, through the delivery of two (2) capacity building/training sessions to relevant stakeholders identified under Activity 1.1.2.1.

These capacity building/training sessions will provide information and raise awareness on innovation, business models and sustainable financial mechanism that could be applicable to maritime e-mobility transportation. The sessions will be conducted using the modules as well as training materials developed in Activity 1.1.2.2. The aim of these capacity building/training sessions is to create, enhance and develop the capacity of selected representatives at country level to identify, design, implement and supervise measures for the development and growth of maritime e-mobility sector in Cabo Verde.

These sessions will be a mixture of virtual/physical meetings, allowing for the participation of relevant stakeholders across Cabo Verde? islands. As internet connection might be an issue, and to ensure that stakeholders outside Praia can be involved in the training, existing NGOs/CSOs facilities will be used as connection points across the country. **This training courses will be delivered by the subcontractor engaged in the development of the training materials (Activity 1.1.2.2) guided by**

the PMU. These sessions are supposed to take up to three (3) full days, take place in the second semester of Y2 and reach out to at least to 15 stakeholders per session (a total of 30 stakeholders). At the end of each training session a feedback questionnaire will be (electronically) circulated to capture the views and feedback of the participants on the training.

Activity 1.1.2.4: Newsflash on capacity building /training sessions, lessons learned and recommendations

The outcomes of the training sessions delivered under Activity 1.1.2.3 will be compiled in a newsflash that will be published on the Electric Mobility Online Platform established in Output 3.1.2. The newsflash should include the training covered topics, links for the materials delivered, lessons learnt, and recommendations captured during the training and through the feedback questionnaire.

The newsflash will be developed by the PMU (Communication Expert) and it should be published no later than three (3) months after the delivery of the capacity building/training sessions. The brochure compiled will follow the Project Communication and KM Strategies (Output 4.1.1).

Output 1.1.3: A roadmap for upscale of low-carbon energy and maritime transport solutions is developed and presented for validation by the Ministry of the Sea and the Ministry of Industry, Trade and Energy

Activity 1.1.3.1. Development of the Roadmap

The proposed Project aims to guide the efforts of relevant market players in Cabo Verde for the upscale of low-carbon maritime transport solutions coupled with technically related low-voltage mobility and energy solutions. For that it will **develop a roadmap that will be a blueprint to guide the formulation of policies and infrastructure plans that could enable successful maritime e-mobility deployment in Cabo Verde aiming the reduction of GHG emissions from maritime transportation.**

The roadmap will be developed through consultation workshops with stakeholders, including the ones identified in Activity 1.1.2.1. It will clearly define an overarching strategic objective and capture the major steps planned for achieving that objective including:

- ? Definition of the current national landscape: stakeholder mapping, technology review, and any existing challenge or barriers as well as drivers to the promotion of maritime e-mobility.
- ? Assessment of market initiatives and policies at national and international level (including a literature review and a global benchmark of best practices and state-of-the-art strategies being adopted in the field).
- ? Analysis of status quo of infrastructure and research in Cabo Verde.

? Inclusion of gender analysis, collecting sex disaggregated data during data collection, considering gender dimensions in the surveys and interviews and involving gender experts, gender focal points and women's organizations.

? Recommendations on infrastructure plans and research fields to be considered (include consideration of technically related low-voltage mobility and energy solutions).

? Recommendations on public policies gaps to be addressed.

? Recommendations on measures and guidelines for renewable energy use as well as waste management for used batteries (e.g., repurposing, recycling, and disposal).

The roadmap will serve as an action plan, and its recommendations should, amongst others:

? Be in line with the Nationally Determined Contributions (NDC), Electricity Master Plan and the Blue Economy Program and Investment Plan, as well as any other relevant strategies and policies. The Ministry of Sea should be engaged to analyse alignment with the Blue Economy Investment Plan for government co-funding.

? Build synergies with existing programmes and projects in place. The Ministry of Sea should be engaged to identify synergies with the Blue Economy Program as well as representatives of on-going projects such as PROMAE and CFI-CF should be engaged to identify synergies with the respective projects.

? Capture social and gender dimensions as well as environmental dimensions such as climate change mitigation.

This activity is envisaged to take place in Y3 and will be guided by the PMU that will subcontract a team of experts to develop the roadmap with inputs from key stakeholders through participation in workshops and through input into roadmap drafts. Once drafted, the **roadmap for upscale of low-carbon energy and maritime transport solutions will be validated through a national workshop** designed in Activity 1.1.3.2 for which the SMTU members will be invited to.

Activity 1.1.3.2. Workshop for validation of the roadmap (50% women participation and 30% youth participation)

The draft roadmap will be presented and validated through a national workshop for which the SMTU members, including the Ministry of the Sea and MICE, will be invited to attend. Women's organizations will also be invited to validate it from a gender perspective as well as youth groups.

The validation workshop should happen no later than two (2) months after the development of the draft roadmap. The PMU, with support from the hired team of experts that developed the roadmap, will be responsible for the organization of the validation workshop as well as for the compilation of the workshop proceedings that will then be made available on the Online Platform. It is envisaged that 40 people will participate in this workshop, of which 50% would be women and 30% youth.

The following table summarises the outcomes, outputs, and activities of PC1.

<i>PC1: Policy and Institutional support to promote low-carbon maritime mobility solutions</i>	
PC1 is directed at developing the necessary legal and regulatory framework to support the implementation of maritime e-mobility solutions through: (i) creation and operationalization of the SMTU; (ii) capacity development of interested government agencies and other interested institutions; and (ii) development and validation of a roadmap for upscale of low carbon energy and maritime transport solutions	
<u>Outcome 1.1 Capacity building and support for creation and implementation of low-carbon energy and sustainable maritime transport policy is provided</u>	
<i>Output 1.1.1: Sustainable Maritime Transport Unit (SMTU) is established</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 1.1.1.1. Establishment of the SMTU and its operationalization	MICE/DNICE with support from the PMU and UNIDO
Activity 1.1.1.2. Activity 1.1.1.2: Conduct one (1) training session on low carbon energy and sustainable transport solutions for the SMTU members (with 50% women participation and a 30% youth participation)	Subcontractor with UNIDO support
<i>Output 1.1.2: Capacity development of interested government agencies and other institutions is provided</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 1.1.2.1. Mapping of relevant institutions and capacity building needs assessment	Subcontractor
Activity 1.1.2.2. Design of the capacity building programme and development of training materials tailored for the several government agencies? needs in Cabo Verde	Subcontractor with support from CERMI, ECREEE and UNIDO
Activity 1.1.2.3: Conduct at least two (2) capacity building/training sessions on low carbon energy and sustainable e-mobility solutions (with 50% women participation and 30% youth participation)	Subcontractor with PMU and UNIDO guidance
Activity 1.1.2.4: Newsflash on capacity building /training sessions, lessons learned and recommendations	PMU
<i>Output 1.1.3: A roadmap for upscale of low-carbon energy and maritime transport solutions is developed and presented for validation by the Ministry of the Sea and the Ministry of Industry, Trade and Energy</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 1.1.3.1. Development of the Roadmap	Subcontractor
Activity 1.1.3.2. Workshop for validation of the roadmap (50% women participation and 30% youth participation)	PMU with support from the Subcontractor

PC2 Support the supply of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions and related technologies

PC2 will address the above referred barriers through: (i) the execution of a feasibility study for broader adoption of low-carbon energy and transport solutions in Cabo Verde, covering technical, economic and organizational issues for the implementation of two (2) pilot project; and (ii) by implementing and operationalizing the selected and studies pilots. At PPG stage, the sites of Monte Trigo (Santo Ant?o Island) and S?o Pedro (S?o Vicente Island) shown in Figure 11, were selected for the implementation of the pilot project and their pre-feasibility was assessed and is included in Annex P ? Baseline Report.

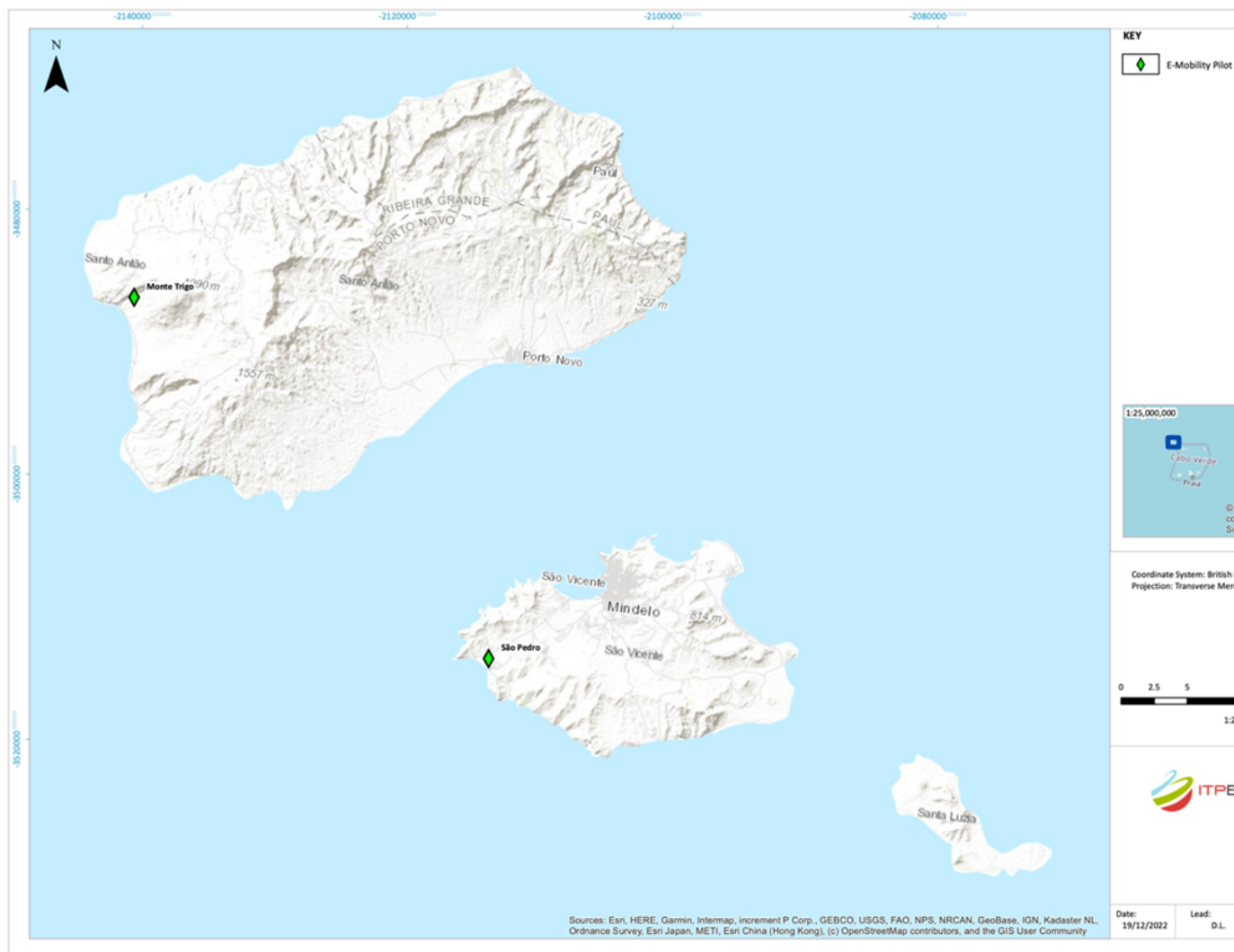


Figure 11: Location of the pilots.

Through the demonstration and testing of low carbon renewable energy, e-mobility solutions and supporting infrastructure, this PC will generate data to support policy making and generate experiences and lessons learnt for replicating these concepts in other villages. The PC results will be key for raising awareness and building capacity and will be used as a foundation for the materials and activities implemented under PC3.

This project component will be gender responsive. This includes conducting gender analysis and involving gender experts and women's organizations, to understand the needs and priorities of women in the development of project activities, including the planning and design of demonstrations, as well as ensuring that women have equal opportunities to lead, participate in and benefit from all project activities.

Outcome 2.1 Potential of low-carbon energy and transport solutions is demonstrated and recognized

Output 2.1.1: Feasibility study for broader low-carbon energy and transport solutions is developed

Activity 2.1.1.1: Undertake the feasibility studies for the selected pilot projects and elaborate final project design and implementation plan

At PPG stage two (2) locations were identified to implement pilot project, to test and demonstrate the deployment of low-carbon renewable energy e-mobility solutions for transport (with a special focus on maritime transport) and supporting infrastructure, and its pre-feasibility was assessed. In this activity **detailed feasibility studies (technical, social and financial) will be conducted by an expert/company in the field to be contracted by the PMU.**

The advancement of modern battery technologies has resulted in a rapid uptake of a wide range of new low-voltage electricity supply and mobility solutions. Many of these developments have been without regard to standardization or quality controls, leading to unnecessary safety concerns, inefficiencies, wastage and poor outcomes for consumers. Careful standardization has the potential to significantly improve upon this situation without impeding innovation, and more robust development of the sectors involved is expected. Yet apart from a few specific examples, standardization is only just emerging. The feasibility studies will identify the 'AA battery' specifications of this low-voltage market, for both batteries and appliances, that better fit the needs of the selected locations, and of the country in general. It is important that the selected technologies and business models to be tested/demonstrated through the pilots can be replicated within the country and even in other SIDs of developing countries.

Thus, in the identification of the technologies/business models, the feasibility studies will consider:

? Global developments in battery swapping, including standardized specification for batteries and connectors, in-service and post-service battery management, automated charging and dispensing stations, and business models.

? Global developments in low-voltage mobility, including for maritime vessels and small-format land vehicles, the potential for standardized specification of powertrain and related electronic components, and models for ownership, maintenance and hire.

? Global developments in small-scale, low-voltage electricity generation from solar, including that relevant to maritime vessels, and the potential for standardized specification

The results of the feasibility assessments will be used and include the: (i) elaboration of the final pilot project designs; (ii) the implementation plan; and (iii) identification of the need for associated technical assistance.

These studies will be developed in Y1 in partnership with the targeted municipalities/fishing communities and co-financiers to secure necessary finance and technical assistance from all co-investors. They will also solicit the opinion of local community, recommend ways of promoting women's participation in the demonstration pilots and describe potential scale-up options for each of the pilots.

Activity 2.1.1.2: Provide transactional advisory services for the pilot project

Once the feasibility assessment and technical specifications are conducted, the **PMU will subcontract a company to provide transactional advisory services for the selected pilot projects.** These transactional advisory services will include procurement documents preparation, evaluating offers/bids and other that may be identified at that point. **This activity is expected to be executed and finalized at the end of Y1 of the proposed project, so that pilot project implementation and testing can start in Y2.**

Activity 2.1.1.3: Facilitate the realisation of a scalable e-mobility investment

In this activity the **PMU will subcontract the execution of a report that based on the experience and lessons learnt from the implementation of the two pilots will look into how these solutions can be scaled up in Cabo Verde,** what would be the best models to be adopted for that, how much investment is needed and how that will contribute to the Roadmap set up in PC1. This activity will be **carried out in the beginning of Y4,** so to allow for the implementation and operationalization of the pilots and should involve intensive stakeholders' consultation, including public and private sector actors as well as possible co-financiers.

Output 2.1.2: Infrastructure for the charging of electric batteries is installed in two target villages

Activity 2.1.2.1: Prepare and selected a Contractor's for the provision of the technologies selected in the feasibility studies to be implemented in the pilot projects

Following the specification of a standardized low-voltage battery swap system, as determined in the feasibility studies under Output 2.1.1, the **PMU will subcontract the preparation of the ToRs for selection of a Contractor to manufacture and install the necessary infrastructure for the charging of electric in the two target villages.** The ToRs will clearly indicate the selected technical specifications as per the feasibility studies, the technical designs that the Contractor should follow, as

well as other information that should be included in the proposal to be evaluated (e.g. credentials and quality/environmental management systems that the Contractor should have in place; the Environmental and Social management Plan to be followed; the provision of training, yearly refreshers and technical assistance during the proposed project as specific in Activity 2.1.2.3). The ToRs will also include the evaluation methodology and criteria that will be used in the Contractor's selection.

The ToRs will be published in the Electrical Mobility Online Platform, Cabo Verde journals and UNIDO procurement website to reach out to a wider audience. Once the proposal are received, they will be analysed following the evaluation criteria and the most cost-efficient contractor selected. The ToRs will include how the Infrastructure for the charging of electric batteries could be made so that it benefits women and makes it safe for children since women might be more likely to bring children when using it.

This activity of **drafting and selection of a Contractor is expected to be carried out in Y1 of the proposed project**, so that it can be supplied and installed in Y2.

Activity 2.1.2.2: Demonstration of automated battery swap stations

In this activity, the **selected specification for automatic battery swap station will be installed and demonstrated in the two villages**. As identified at the PPG stage, it is envisaged that the technical specification will include battery (including battery protection, monitoring, fault diagnostics and communications systems), battery docking station (including quick-connect/disconnect connector), and end use specifications (including maximum current draw, wiring codes and safety feature requirements) for the following applications:

- ? Low-power premises, including homes, that are fitted with low-voltage electricity reticulation and low-voltage solar electricity generation.
- ? Land-based, small-format, battery-swap electric vehicles.
- ? Low-powered, battery-swap electric marine vessels, including those fitted with low-voltage solar electricity generation.

The specification for the battery swap stations considered for the pilots and used in the Pre-feasibility Assessment are included in Annex P ? Baseline and Pre-Feasibility of Pilots. In keeping with modern-day approaches, the **battery charging and exchange station will operate autonomously** with automated user identification, user access, and billing services. The health of the batteries will also be automatically monitored, and faulty batteries identified and held for maintenance. The swappable batteries are also to include a quality battery management system (BMS), GPS tracking and current user/base immobilisation (as a deterrent to theft and improper use).

The electricity demand from battery charging could be usefully managed alongside the demand for electricity from ice-making, which would be useful for fishers or for a desalinization plant useful for the communities. The feasibility assessment carried out under Output 2.1.1, will look into the possibility of connecting the battery-swap station to either an ice-making facility or a desalinization

plant to take advantage of any excess electricity available once sufficient or all of the batteries available in the charging station have been fully charged. It is proposed that the ice-making equipment/desalinization plant will be gifted to the village, and its operation, maintenance and use of the ice / generation of potable water will be managed by a village project committee or as part of the management of the battery and battery-swap system.

It is envisaged that by **end of Y2 of the project, that the automated battery swap station is fully functional, and that specific people from the Community Battery Leasing/Renting Centres have been appointed for testing, servicing, monitoring and performance improving, refurbishing & repairing and repurposing the batteries** for example for stationary energy storage associated with solar generation. The staff of the **Community Battery Leasing/Renting Centre (see Output 2.1.3)** will be trained on the activities that they are expected to perform in Activity 2.1.2.3. With the delivery and installation of these technologies, an Environmental and Social Management Plan (ESMP) should be provided, so that the Community Battery Leasing/Renting Centre know what to do and who to report to in terms of system performance / operation and management of non-conformances.

It is envisaged that at the end of the project the **Community Battery Leasing/Renting Centres** will keep up with their activities, guaranteeing the sustainability of these projects.

Activity 2.1.2.3: Provision of training and technical assistance to ensure durability of the project and its investments

A training workshop will be provided by the selected Contractor to the PMU and the Community Battery Leasing/Renting Centres staff responsible for testing, servicing, monitoring and performance improving, refurbishing & repairing and repurposing the batteries installed in Activity 2.1.2.2. **This is expected to be done once the equipment's are installed and are being tested.** In addition, training on the ESMP to be put in place will also be provided. Besides the initial training the Contractor will also provide yearly refreshers of the training in Y3 and Y4 of the proposed Project and technical assistance as needed, to ensure the durability of the provided equipment and that the Community Battery Leasing/Renting Centres staff build up experience and confidence in managing/operating/maintaining the installed technologies.

Activity 2.1.2.4: Monitoring and verification of the installed pilots

Monitoring and verification of the installed products will be carried out by the Community Battery Leasing/Renting Centres (Output 2.1.3), that will report on the performance of the project to the PMU on a continuous basis. They will also be **responsible for submitting to the PMU a Yearly Report detailing the results, activities performed, issues faced and lessons learnt during the implementation, with pictures and battery use information** to be used: (i) by the PMU on its M&E tasks; (ii) used in the generation of information and knowledge materials to be used in the Electric Mobility Online Platform, on awareness raising and information campaigns, training programmes and on case studies (see PC3). All the information supplied should be disaggregated by sex and age as possible, should be gender responsive, and follow the projects Communication Strategy & Plan (see PC4). Since the pilot projects are expected to be installed in Y2 of the proposed Project, **three (3) yearly reports (for Y2, Y3 and Y4) should be produced and submitted to the PMU** during the

project. The specific format of the reports will be detailed at the start of the proposed Project and will be made available to the responsible entities.

Output 2.1.3: Two (2) Community Batteries Leasing/Renting Centres are established

Activity 2.1.3.1: Definition of a business model for providing charge batteries as a service

There are many potential business models that could be used for providing charged batteries as a service. In this activity **a village battery ownership and management model will be adopted to be tested in the two pilots. This will involve the implementation of two (2) Community Battery Leasing/Renting Centres, one in each selected village.** This model was selected as it is a more familiar, entrepreneur-led start-up approach, that provides greater certainty for demonstration purposes, and because once the project comes to an end, the assets will then be provided to the community rather than to a private party. Village ownership is also hoped to bring about a sense of community ownership and pride, and attract benefits associated with this approach.

The **Community Battery Leasing/Renting Centres** will employ local people in the villages (50% women and 30% youth) for the provision of battery leasing/renting services as well as the maintained of the necessary charging stations implemented in Output 2.1.2. Additionally, to the responsibilities defined in Output 2.1.2, the Centre?s will also be responsible for battery monitoring and data analysis will be automated with exception alerts provided to the nominated, trained village battery ?housekeeper? for action. Battery use data, alerts and work carried out on batteries will be overseen by a battery expert (likely from the Contractor). And battery and user data, plus battery station/village earnings and costs, will be analysed by a project analyst with findings used as an input into the upscaling roadmap.

The **operation of the Community Battery Leasing/Renting Centres will be better defined when the feasibility study is finalized (Y1 of the project)**, and at that point there will be a clear indication of the number of people to be employed at the Centres as well as the different services that will be provided by them.

The business model of the Centre?s will be defined by the same Sub-Contractor developing the feasibility study in Output 2.1.1.

Activity 2.1.3.2: Two (2) Community Battery Leasing/Renting Centres are established in the two (2) villages

With the defined model, the two **Community Battery Leasing/Renting Centres will be established and operationalized. The staff of the Centres will be selected through a public procurement process, for which ToRs will be developed by the PMU.**

To support on the activities of the Centres, the **PMU will subcontract a Battery Expert and Project Analyst to provide oversight on the defined and implemented business model.** Reporting on the on the provided battery leasing/renting services is expected to be carried out at least yearly, once the pilots are installed, in the same reports developed within Output 2.1.2. that report on the village battery

charging stations that the Community Battery Leasing/Renting Centres are also supposed to manage/monitor.

Output 2.1.4: Demonstration of low-powered, battery-swap electric marine vessels to demonstrate shared access to electric marine propulsion systems in the two (2) target villages

Activity 2.1.4.1: Prepare and selected a Contractor?s for the provision of low-powered, battery-swap electric marine vessels to demonstrate a shared propulsion system and demonstrate vessel on-board solar generation as part of the pilots

Following the specification of a standardized low-voltage battery swap system, as determined in the feasibility studies under Output 2.1.1, the **PMU will subcontract the preparation of the ToRs for selection of a Contractor for the provision of low-powered, battery-swap electric marine vessels to demonstrate a shared propulsion system and demonstrate vessel on-board solar generation.** The ToRs will clearly indicate the selected technical specifications as per the feasibility studies, the technical designs that the Contractor should follow, as well as other information that should be included in the proposal to be evaluated (e.g. credentials and quality/environmental management systems that the Contractor should have in place; the Environmental and Social management Plan to be followed; the provision of training, yearly refreshers and technical assistance during the proposed project as specific in Activity 2.1.4.3). The ToRs will also include the evaluation methodology and criteria that will be used in the Contractor?s selection.

The ToRs will be published in the Electrical Mobility Online Platform, Cabo Verde journals and UNIDO procurement website to reach out to a wider audience. Once the proposal are received, they will be analysed following the evaluation criteria and the most cost-efficient contractor selected.

This activity of **drafting and selection of a Contractor is expected to be carried out in Y1 of the proposed project**, so that it can be supplied and installed in Y2.

Activity 2.1.4.2: Demonstration of low-powered, battery-swap electric marine vessels managed by the Community Battery Leasing/Renting Centres

In this activity, the **selected specification for low-voltage, electric outboards and battery swap systems suitable for use by low-powered vessels in the feasibility studies carried out in Output 2.1.1, low-powered, battery-swap electric marine vessels and shared access to electric propulsion systems will be implemented in two target villages for demonstration purposes** As identified at the PPG stage, it is envisaged that these will include the main components of the electric outboards and marinized swappable battery systems, including for the motor/drive unit, motor controller, demand sensor, marine-compatible batteries, marinized multiple battery compartment/holder, visual display units (for both the electric outboard and battery compartment), programming and diagnostics ports (for both these electric outboard and battery compartment, noting also that these might be wireless ports), the electrical connectors used by these components and electrical and communications compatibility across them.

The demonstration of the low-powered, battery-swap electric marine vessel will comprise replacing the petrol outboard and tank with an electric outboard and swappable batteries and done in such a way that the safety of the crew, the vessel and the electric outboard and batteries is not be compromised. A portable, low-voltage solar electricity generation panel and controller will also be provided for vessel operators to use onboard their vessel.

It is **proposed that ownership of the electric outboards, marinized batteries, and portable solar generation systems will be bestowed upon the village, and that their use and maintenance will be managed by the Community Battery Leasing/Renting Centres.** The vessel operators will be given the option to choose to use an electric outboard and battery system through a shared access arrangement managed by an asset-share app (that manages the hire of the electric outboard, swappable marinized batteries and solar generation system at the same time), with oversight of the operation by the village committee. The Community Battery Leasing/Rental Centre will set the rules of the shared-access app and set the rates of hire to stimulate high use of the electric outboards.

The marinized swap-batteries will have battery calisthenics and GPS monitoring and this data will be used to monitor the use and health of the batteries with exception reporting causing a battery to be held for checking and maintenance. Depending on the degree of maintenance needed, the maintenance will be either performed by village's trained battery maintenance person, with oversight by a battery expert, both sitting in the Community Battery Leasing/Rental Centre, or by a an electronic specialist that the Community Battery Leasing/Rental Centre will identify for it. The battery use data will also be used to monitor the use of the electric outboards and will be analysed by the project's analyst. Note that the choice to use an electric propulsion system is expected to significantly address the barrier that would otherwise present itself if fishers had to opt for an electric propulsion system on a permanent basis. This short-term access arrangement takes advantage of the ability to quickly switch between an electric and a petrol outboard and also provides the vessel operator with the choice to opt to use a petrol outboard when they are required to undertake a long voyage (i.e., when a battery propulsion is not a good fit, due to the weight of batteries required). Training will be provided in support of these activities (see Activity 2.1.4.3), which will include training in best use of the electric outboard and battery systems and in general vessel planning and use.

It is envisaged that by **middle of Y2 of the project, that the low-powered, battery-swap electric marine vessels are fully functional, and that specific people from the Community Battery Leasing/Rental Centre have been appointed checking and maintenance of the batteries.** The staff of the **Community Battery Leasing/Rental Centre (see Output 2.1.3)** will be trained on the activities that they are expected to perform in Activity 2.1.4.3. With the delivery and installation of these technologies, an ESMP should be provided, so that the Community Battery Leasing/Rental Centre know what to do and who to report to in terms of system performance / operation and management of non-conformances.

It is envisaged that at the end of the project the Community Battery Leasing/Rental Centre will keep up with their activities, guaranteeing the sustainability of these projects.

Activity 2.1.4.3: Provision of training and technical assistance to ensure durability of the project and its investments

A training workshop will be provided by the selected Contractor to the PMU and the Community Battery Leasing/Rental Centre responsible for operating the electric outboards and checking and maintain the batteries and vessels installed in Activity 2.1.4.2. This is expected to be done once the equipment's are installed and are being tested. The training should cover:

- ? the retrofit of low-powered vessels to electric propulsion,
- ? technical support of the electric propulsion system including best practices for mounting the electric outboard and batteries, and
- ? fault diagnosis and repair, voyage planning and best practice operation.

In addition, training on the ESMP to be put in place will also be provided. Besides the initial training the Contractor **will also provide yearly refreshers of the training in Y3 and Y4 of the proposed Project and technical assistance as needed**, to ensure the durability of the provided equipment and that the Community Battery Leasing/Renting Centres staff build up experience and confidence in managing/operating/maintaining the installed/supplied technologies.

Activity 2.1.4.4: Monitoring and verification of the installed pilots

Monitoring and verification of the installed products will be carried out by the Community Battery Leasing/Renting Centres (Output 2.1.3), that will report on the performance of the project to the PMU on a continuous basis. They will also be **responsible for submitting to the PMU a Yearly Report detailing the results, activities performed, issues faced and lessons learnt during the implementation, with pictures and e-vessels information** to be used: (i) by the PMU on its M&E tasks; (ii) used in the generation of information and knowledge materials to be used in the Electric Mobility Online Platform, on awareness raising and information campaigns, training programmes and on case studies (see PC3). All the information supplied should be disaggregated by sex and age as possible, should be gender responsive, and follow the projects Communication Strategy & Plan (see PC4). Since the pilot projects are expected to be installed in Y2 of the proposed Project, **three (3) yearly reports (for Y2, Y3 and Y4) should be produced and submitted to the PMU** during the project. The specific format of the reports will be detailed at the start of the proposed Project and will be made available to the responsible entities.

The following table summarises the outcomes, outputs, and activities of PC2.

PC2: Support the supply of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions and related technologies

PC2 aims to support the supply sustainable energy infrastructure to drive low-carbon maritime mobility solutions and related technologies through the assessing the feasibility, implementing and operationalizing two (2) selected e-mobility pilot projects located in Tarrafal de Monte Trigo and S?o Pedro. Through the demonstration and testing of low carbon renewable energy, e-mobility solutions and supporting infrastructure, this PC will generate data to support policy making and generate experiences and lessons learnt for replicating these concepts in other villages

Outcome 2.1: Potential of low-carbon energy and transport solutions is demonstrated and recognized

Output 2.1.1. Feasibility study for broader low-carbon energy and transport solutions is developed

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 2.1.1.1. Undertake the feasibility studies for the selected pilot projects and elaborate final project design and implementation plan	Subcontractor with guidance and support from targeted municipalities/fishing communities
Activity 2.1.1.2. Provide transactional advisory services for the pilot project	Subcontractor
Activity 2.1.1.3. Facilitate the realisation of a scalable e-mobility investment	Subcontractor

Output 2.1.2: Infrastructure for the charging of electric batteries is installed in two target villages

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 2.1.2.1. Prepare and select a Contractor?s for the provision of the technologies selected in the feasibility studies to be implemented in the pilot projects	Subcontractor with guidance from UNIDO
Activity 2.1.2.2: Demonstration of automated battery swap stations	Contractor (supplying and installing the equipment) & Community Battery Leasing/Renting Centres operating and maintain the pilots; Support from UNIDO
Activity 2.1.2.3: Provision of training and technical assistance to ensure durability of the project and its investments	Contractor
Activity 2.1.2.4: Monitoring and verification of the installed pilots	Community Battery Leasing/Renting Centres operating and maintaining the pilots

Output 2.1.3 Two (2) Community Batteries Leasing/Renting Centres are established

<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
---	------------------------------

Activity 2.1.3.1: Definition of a business model for providing charge batteries as a service	Subcontractor (same as for the feasibility assessment carried out in Output 2.1.1)
Activity 2.1.3.2: Two (2) Community Battery Leasing/Renting Centres are established in the two (2) villages	Community Battery Leasing/Renting Centres, Battery Expert and Project Analyst with guidance from UNIDO
<i>Output 2.1.4: Demonstration of low-powered, battery-swap electric marine vessels to demonstrate shared access to electric marine propulsion systems in the two (2) target villages</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 2.1.4.1: Prepare and select a Contractor/s for the provision of low-powered, battery-swap electric marine vessels to demonstrate a shared propulsion system and demonstrate vessel on-board solar generation as part of the pilots	Subcontractor
Activity 2.1.4.2: Demonstration of low-powered, battery-swap electric marine vessels managed by the Community Battery Leasing/Renting Centres	Contractor (supplying and installing the equipment) & Community Battery Leasing/Renting Centres operating and maintain the pilots with guidance from UNIDO
Activity 2.1.4.3: Provision of training and technical assistance to ensure durability of the project and its investments	Contractor
Activity 2.1.4.4: Monitoring and verification of the installed pilots	Community Battery Leasing/Renting Centres operating and maintaining the pilots

PC3: Stimulation of the demand for electric battery services

To foster adoption of electrical battery services (besides the e-mobility solutions) it is necessary to stimulate the demand. PC3 will focus on exchanging knowledge, experiences and lessons learned and on disseminating Project results, with a special focus on the experience and lessons learnt generated through the implementation of the two (2) selected pilot projects in PC2.

Outcome 3.1: National and local awareness of low-carbon energy and transport solutions enhanced and supported by information from demonstrations

Output 3.1.1: Stakeholders' awareness of the benefits, effectiveness and viability of maritime electric mobility is enhanced through community-level awareness raising services provided and

educative material disseminated, in particular via the establishment of a public information platform

Activity 3.1.1.1 Establish and maintain the Online Platform

An **Electric Mobility Online Platform** webpage will be the primary mean used by the proposed Project for dissemination of information and knowledge, as well as a tool to support the implementation of several project activities. It is envisaged that this platform will be hosted as part of by DNICE website. It will be used to: (i) raise awareness of the general public on electric mobility and marine electric mobility solutions; and (ii) capture, store and disseminate knowledge generated from the project implementation. The platform will:

- ? Provide information on the proposed Project implementation status, on-going/planned activities, activities result (deliverables, materials for consultation etc), and lessons learnt from project implementation.
- ? Advertise trainings, discussion fora, workshops and other events being put in place by the proposed Project.
- ? Advertised procurement activities carried out by the Project for the implementation of its activities.
- ? Be used to communicate and share knowledge and information materials on best-practices and lessons learnt for integration of e-mobility solutions in the maritime and energy sector as well as on the business models adopted and being tested by the proposed Project.

The platform will be designed to be gender responsive. For example, content should not perpetuate gender stereotypes and allows men and women to be on equal footing and stories and photos published should have equal number of men and women for the same positions, ensuring fair visibility. It will also include a specific section on gender and youth (focused tab).

The **Electric Mobility Online Platform will be developed and hosted by the DNICE/PMU and will be linked to other ministries' existing platforms** (e.g., Ministry of the Sea) including linked to other platforms identified in the Communication Strategy developed under Output 4.1.1. Special efforts will be made to have this webpage in both English and Portuguese so that outreach and communication activities are successful in reaching the target audience. The design of the Electric Mobility Online Platform will be done by a National IT Consultant and the maintenance and updating of the platform content/information will be carried out during the project by the PMU (that will include amongst its team a Communication Expert that will oversee the online content that will be made available) with time-to-time support from a National IT Consultant. The National IT Consultant will be hired to provide one or two days of support each month to the Electric Mobility Online Platform. It is envisaged that the Electric Mobility Online Platform will be hosted by the DNICE (where the PMU is also established) since the start of the project ensuring ownership and its sustainability after the project comes to an end. In addition, considering that women are more likely to be illiterate than men, the

project will make sure that they can also access this information through appropriate channels such as movie and podcast as well as local women's focus group meeting.

Activity 3.1.1.2 Implement an awareness raising and information campaign on e-mobility

To raise awareness of the community an e-mobility awareness raising, and information campaign will be designed and implemented by the Project. This will display general information about e-mobility solutions for transportation and energy sector and will showcase the demonstration project implemented along with the lessons learnt from its implementation. The demonstration project case studies (resulting from Output 3.1.2) will be key materials used on the campaign. The campaign will include the dissemination of information through several means:

- Electric Mobility Online Platform (Activity 3.1.1.1)
- Media ? radio and TV adverts
- Two (2) workshops.

Two (2) awareness raising workshops on e-mobility will be deployed by the project in Cabo Verde as part of the **awareness raising and information campaign. These workshops are expected to be half day workshops, taking place on Y2 and Y4 of the project. They are envisaged to reach out to around 50 stakeholders each.** After each workshop a short news about the event will be developed in which the information about the workshop and participants (disaggregated by sex and age) will be displayed and made available in the Electric Mobility Online Platform along with the materials used on it. These workshops will be conducted in rural areas around target communities. To mitigate a potential risk that only well-educated and urban women will benefit from the project, the project will look to include competition categories that are targeted at rural regions (e.g., adaptation technologies benefiting women lead activities) and which include technology areas that women are currently working in (e.g., fishing sector). Also, the selection process will include a criterion to assess the rurality of the applicants, contributing in this way to mitigate this risk.

All materials used and generated for these campaigns will follow the Projects Communication Strategy and guidelines (Output 4.1.1) and will be gender responsive.

The PMU will be responsible for the design, organization and implementation of the awareness raising and information campaign as well as for documenting and making available the information on the carried-out activities on the Electric Mobility Online Platform.

Output 3.1.2: Demonstration projects showcased through case studies

Activity 3.1.2.1 Compile case studies on the implemented demonstration projects

The implementation and operationalization of the demonstration projects will be documented and disseminated through brochures, visual appealing participatory videos and photo story telling uploaded on the Electric Mobility Online Platform, that will share success stories, lessons learnt and best practices. This material should include testimonials of men and women about the impact of the

deployment of these solutions in the communities in which they were implemented as well as in their business and day to day life. They should include information on the social, economical and environment impacts of the different types of business models, technologies and supporting infrastructure introduced with the pilots and what their scale up potential for other island communities in Cabo Verde and/or other SIDS and ECOWAS countries. Emphasis will be provided on stories about women and youth.

The information and critical assessment of the pilot projects implemented (that include the identification of their impacts) will be carried out by sub-contracted experts (Media Expert and an E-mobility Expert) by the PMU, to ensure independence of the findings and good quality of the materials produced. The materials compiled will follow the Project Communication and KM Strategies (Output 4.1.1). It is expected that these materials will be compiled 6 to 12 months after the implementation of the pilots, so that they have been tested by the communities in which are implemented, and meaningful information can be collected about them.

Besides making the information available on the Electric Mobility Online Platform the PMU will showcase these projects on the awareness raising campaign (Output 3.1.2) and in other awareness raising sessions and training programmes organised under Output 3.1.3.

Output 3.1.3: Awareness raising sessions and training programs provided on the results and learnings from the demonstrations

Activity 3.1.3.1. Share results and learnings from the demonstrations through awareness raising sessions and training programmes

Cabo Verde will not only play a pioneering role in e-mobility for other SIDS and ECOWAS Member States, but it will also benefit from the knowledge learned by UNIDO through other projects (the PROMAE implemented under the NAMA Facility by DNICE) and the Global Program to Support Countries with the Shift to Electric Mobility, as well as by sharing and discussing its experience with other SIDS within SIDSDOCK. Synergies with events conducted by GEF Small Grants Programme and the UNDP GEF7 Project will be explored during the project implementation.

The proposed Project aims to share knowledge and learnings from the implementation of its activities, through the disclosure of useful information, supporting the participation of relevant stakeholders in events and targeted training programmes. These will include supporting the participation of key stakeholders in:

- Events organized by the PROMAE in which they will share learning and knowledge generated by the proposed Project ? national workshops, awareness raining sessions and events.
- Teleconferences and webinars also organized by the PROMAE
- Virtual events organized by SIDSDOCKS and the UNIDO GN-SEC Centres around the world.

It is envisaged that **key stakeholders will participate in at least two (2) events per year from Y2 to Y4, totalising at least six (6) events over the Project's period of implementation.** The PMU will be the one to decide what key stakeholders to send to each event.

The following table summarises the outcomes, outputs, and activities of PC3.

<u>PC3: Stimulation of the demand for electric battery services</u>	
PC3 activities aim at stimulating the demand e-mobility services through awareness raising and information dissemination activities.	
<u>Outcome 3.1: National and local awareness of low-carbon energy and transport solutions enhanced and supported by information from demonstrations</u>	
<i>Output 3.1.1: Stakeholders' awareness of the benefits, effectiveness and viability of maritime electric mobility is enhanced through community-level awareness raising services provided and educative material disseminated, in particular via the establishment of a public information platform</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 3.1.1.1. Establish and maintain the Online Platform	PMU
Activity 3.1.1.2. Implement an awareness raising and information campaign on e-mobility	PMU
<i>Output 3.1.2: Demonstration projects showcased through case studies</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 3.1.2.1 Compile case studies on the implemented demonstration projects	Subcontractor
<i>Output 3.1.3: Awareness raising sessions and training programs provided on the results and learnings from the demonstrations</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 3.1.3.1. Share results and learnings from the demonstrations through awareness raising sessions and training programmes	PMU

PC4: Monitoring and Evaluation

PC4 focuses on Project Monitoring and Evaluation (M&E). Component 4 Monitoring and Evaluation is a continuous learning process from what has been implemented (both success and failure) and acquiring new knowledge.

Outcome 4.1: Adequate monitoring of all project indicators in line with GEF, UNIDO and Government of Cabo Verde requirements

Output 4.1.1 Project effectively monitored

Activity 4.1.1.1. Effective monitoring of the project

The proposed project will follow UNIDO standards for monitoring and reporting processes and procedures consistent with the GEF Monitoring Policy.

A Monitoring process refers to the continuous process of collecting data on the agreed indicators to provide information on the extent of progress and achievements made, including project impact. 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 (such as gender-disaggregated data), and variables. The project will set up an M&E system, to track progress on project implementation, making sure that the project is completed on time and budget. The M&E will include monitoring and evaluation of project activities, economic, environmental and social benefits. The project will collect gender-disaggregated data and indicators, and decision metrics will be used to track progress (see Annex A Project Results Framework). Progress will also be tracked in terms of the implementation of the ESMP and stakeholders' engagement plan. Indicators will be identified and used to track intended changes resulting from the project intervention. Qualitative and quantitative indicators will be used to quantify in numbers and descriptive information such as the effectiveness of adaptation measures to the impact of climate shocks during essential oil scaling up.

A Reporting process refers to the systematic and timely provision of essential and useful information showing how the Project is progressing toward the achievement of the project's goals/impacts. 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 issues faced during monitoring in order to take the necessary corrective actions.

The M&E system will be developed and implemented by the PMU. The PMU will provide monitoring reports/updates on the implementation of the project to both UNIDO and the Project Steering Committee (PSC) (see Section 6. Institutional Arrangement and Coordination on the role of the PSC in the implementation and coordination of the project

The M&E system and the tools to be adopted and used by the project will be an integral part of the Inception Report that is to be compiled by the PMU at project start. Moreover, the M&E System will be gender response and report towards the gender mainstreaming strategy and action plan.

Activity 4.1.1.2. Build capacity of Project Execution Partners on the implementation of the M&E system

To make sure all partners engaged in project implementation track progress and report on the necessary indicators to the PMU, training will be provided to them on the implementation of the M&E system of the project. This will help systematic collection of data on the indicators on the extent of progress and achievement of the Project objectives, as well as to make sure the synergies are created with on-going project targeting e-mobility in the country. It also includes training on collecting gender-sensitive

information and sex-disaggregated data needed to measure the impact on gender equality and women's empowerment. This will help to further improve the implementation of the Project and assess its degree of success, as well as to assess its contribution towards the country's renewable energy goals.

Activity 4.1.1.3. Development of the Project's Communication Strategy & Plan and of the Knowledge Management System and Plan

At the start of the project, the **PMU will subcontract a Communication Expert that will be responsible for the design of the Project's Communication Strategy & Plan and the 'brand' that the project will adopt in all its communication** as well as for overseeing and making sure that all disseminated knowledge materials and content produced by the project follows the strategy. The Communication Expert will have to, amongst other things, assess communication platforms and other means of communication to recommend the most effective outreach and communication action plan in its strategy. This will also include the design, branding and content planning of the **Electric Mobility Online Platform** (Output 3.1.1).

The developed strategy should also include clear guidelines and procedures for the communication and dissemination of information, products and news from the Project, the platforms for sharing and exchanging knowledge and connect with people. The communication strategy should have a clear guideline on procedures for revision, approval and dissemination of materials, as well as clear guidelines on how to make gender responsive. All communication and information dissemination activities carried out by the project will have to follow the Project's Communication Strategy and guidelines.

The communication strategy will be reviewed and approved by the PSC and UNIDO. The Communication Expert in the PMU will be the main person responsible for the implementation of this strategy. The PMU will inform all the stakeholders engaged in project activities and the production of materials to be disseminated by the project about the Project's Communication Strategy and guidelines.

At the start of the project the **PMU will also develop a Knowledge Management (KM) System & Plan, closely linked with the Project's Communication Strategy** that will include the several knowledge materials to be produced by the project and how and when they are expected to be disseminated. The approach will explore different ways and processes to better manage knowledge gained and cycles, aiming at interlinking knowledge from multiple stakeholders and end-users. It is expected that the KM System & Plan will:

- ? Improve the information management sharing and collaboration and learning across the partners (other projects/programs, central and local project partners, national agencies active in e-mobility approaches in Cabo Verde)
- ? Strengthen/expand the approaches for up taking the lessons and best practices (use of UNIDO experiences and current projects)
- ? More systematically integrate knowledge capture, dissemination and learning into UNIDO/GEF project design, implementation and reporting.

Both Communication Strategy & Plan and the KM System & Plan will be gender-responsive include respective guidelines to be adopted by the project in all its communication and knowledge materials generated.

In and for the establishment and operationalization of the KM System & Plan a KM team composed with members from the Project Team (including at least the Communication Expert and the Project Coordinator) and different central and local project partners will be identified by the PMU. This KM System & Plan will be monitored and constantly updated throughout the project implementation period by the PMU.

Output 4.1.2: Mid-term review and independent terminal evaluation conducted

Apart from the on-going project monitoring and evaluation carried out by the PMU on a regular basis described in Output 4.1.1, two formal project evaluations will be carried out during the project implementation stage by independent evaluators: one at the middle of the project ? Mid-term Review ? and the second at the end of the project ? Terminal Evaluation. While the Mid-term Evaluation will be used as a tool to assess project progress and propose necessary revisions of project activities in the project framework if required, to ensure the implementation of project results, the Final Evaluation, will be used to assess the overall implementation of the project and to extract recommendations and lessons learnt to inform future project development and implementation. Both the MTR and TE will also report on the gender-related targets in the logframe and towards the implementation of the gender mainstreaming strategy and action plan.

Activity 4.1.2.1: Project Mid-term Review

The Mid-term Review purpose is to provide the PMU with feedback on the ongoing project's performance and to identify early risks to programme/project sustainability, coherence, effectiveness, efficiency and progress towards results, including gender mainstreaming and mainstreaming environmental and social safeguards. Normally, the Mid-term Review has two main objectives: 1) to enhance transparency and dialogue between project stakeholders to promote learning for the further development of the project, as well as for its replicability and scaling-up of results; and (2) to gain insights on the functioning of the project structures and processes; to check what extent project milestones are being achieved, and if targets are likely to be met and results achieved as planned. This evaluation also assesses the design of the M&E framework being used by the project to ensure efficient monitoring during project implementation and evaluability.

For the Mid-term Review, the **PMU will prepare the Terms of Reference (TORs) to recruit an Independent Evaluator to perform the Mid-term Review** of the project according to UNIDO and GEF guidance. The PM at the UNIDO Headquarters will then use these TORs to subcontract the Independent Evaluator. The Mid-term Review is an opportunity to make modifications to the project's design and implementation to ensure project's objectives are achieved within the lifetime of the project. Project's achievements made up to this stage should be identified and compared against baseline and targets, impacts and sustainability of results and possible risks until the finalisation of the project. The Mid-term Review Report will include an action plan that should inform the activities of the project going forward. **The coordination and oversight of the MTE will be carried out by the**

UNIDO Headquarters. The PMU will provide support to the Independent Evaluator during the Mid-term Review by providing the necessary information and clarifications during the process.

Activity 4.1.2.2: Project Terminal Evaluation

The Terminal Evaluation purpose is to assess whether the project has achieved or is likely to achieve its main objective, and to what extent the project has also considered sustainability and scaling-up factors for increasing contribution to sustainable results and further impact. Terminal Evaluations (i) assess the project performance in terms of relevance, effectiveness, efficiency, sustainability and progress in achieving project objectives and its impact; (ii) identify key learnings to feed into the design and implementation of forthcoming projects; and (iii) develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

In this project, the terminal evaluation will review the expected and achieved accomplishments in the use of e-mobility solutions integrated with the use of renewable energy option for remote villages by critically examining whether the project outputs helped to get the outcomes and that ultimately achieve the project objectives, especially assessing the relevance, impact, effectiveness, sustainability, scalability and replicability of the e-mobility solutions.

The PMU will prepare the TORs for the recruitment of an Independent Evaluator that will perform the Terminal Evaluation of the project. The PM at the UNIDO Headquarters will then use these ToRs to subcontract the Independent Evaluator. The Terminal Evaluation will assess achievements made and compare them against baseline and targets, impacts and sustainability of results presenting the overall project performance. **This evaluation should be carried out three months prior to the end of the project. The coordination and oversight of the Terminal Evaluation will be carried out by the UNIDO Headquarters. The PMU should support the Independent Evaluator through the Terminal Evaluation by providing the necessary information and clarifications during the process.**

The following table summarises the outputs and activities of PC4.

<i>PC4: Monitoring and Evaluation</i>	
PC4 is directed at contributing at making sure that the project is on track to achieve its objectives, outcomes and outputs throughout its implementation.	
<i><u>Outcome 4.1: Adequate monitoring of all project indicators in line with GEF, UNIDO and Government of Cabo Verde requirements</u></i>	
<i>Output 4.1.1 Project effectively monitored</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 4.1.1.1: Effective and gender-responsive monitoring of the project	PMU

Activity 4.1.1.2: Build capacity of Project Execution Partners on the implementation of the M&E system	PMU
Activity 4.1.1.3. Development of the Project's gender-responsive Communication Strategy & Plan and of the Knowledge Management System and Plan	PMU
<i>Output 4.1.2 Mid-term review and independent terminal evaluation conducted</i>	
<i>Planned and Envisioned Activities</i>	<i>Responsibility</i>
Activity 4.1.2.1. Project Mid-term Review (incl. review of the gender mainstreaming strategy and action plan)	Independent Evaluators (Project Manager at UNIDO HQ will subcontract the evaluators)
Activity 4.1.2.2. Terminal Evaluation (incl. evaluation/ impact assessment of the gender mainstreaming strategy and action plan)	Independent Evaluators (Project Manager at UNIDO HQ will subcontract the evaluators)

4) ALIGNMENT WITH GEF FOCAL AREA AND/OR IMPACT PROGRAM STRATEGIES;

The proposed GEF/UNIDO project is aligned with GEF-7 *Climate Change (CC) Focal Area Strategy Objective 1: Promote innovation and technology transfer for sustainable energy breakthroughs through electric drive technologies and electric mobility (CCM-1-2)*. The project will finance low-carbon technologies and mitigation options and promote integrated low-emission transport, catalysing technology innovations towards scale, whilst counteracting environmental impacts of air and ocean pollution through the transport and fishing sectors.

The project will further contribute to GEF 7 Climate Change Focal Areas, including: *CCM-1-1 Promote innovation and technology transfer for sustainable energy breakthroughs for decentralised power with energy usage*, through developing battery-as-a-service, and 'last mile' electricity reticulation; *CCM-1-3 Promote innovation and technology transfer for sustainable energy breakthroughs for accelerating energy efficiency adoption*, through demonstrating the energy efficiencies that can be realized through better application of low voltage systems; and *CCM-1-4 Promote innovation and technology transfer for sustainable energy breakthroughs for cleantech innovation*, through demonstrating the use of intelligent demand management systems with renewable energy generation. In addition, the project's achievement will also contribute to GEF-7 International Waters (IW) Focal Area and Chemicals and Waste (CW) Focal Area Strategies, considered to be a co-benefit: *IW-1-3 Strengthen blue economy opportunities by addressing pollution reduction in marine environments*, through avoiding the use of fuels and lubricants for small marine vessels; and *CW-2-3 Strengthen the enabling environments in LDCs and SIDs to manage harmful chemicals and waste*, through introducing battery stewardship as part of the battery services provided plus introducing standardized specifications that are expected to enable local repair and other leading to reduced e-

waste. Furthermore, the project will also contribute to GEF-7 Climate Change Adaptation Focal Area Strategy *CCA-1 Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation*, through the introduction and awareness provided on more weather event-robust energy and mobility technologies.

Through the initial GEF funding the proposed GEF/UNIDO project expects to introduce changes on how energy and mobility is provided in the future and support Cabo Verde in realizing Global Environmental Benefits (GEBs) through the reduction of GHG emissions. These GHG emissions include those related to 'last mile' electricity supply using swappable batteries replacing small fossil-fuelled generation, the use of small-format electric vehicles displacing the use of larger fossil-fuelled vehicles either directly or indirectly (including that related to enabling greater use of public transport through providing better first- and last-mile mobility options), the use of electric outboards displacing the use of gasoline-fuelled outboards, and many others.

5) INCREMENTAL/ADDITIONAL COST REASONING AND EXPECTED CONTRIBUTIONS FROM THE BASELINE, THE GEFTF, LDCF, SCCF, AND CO-FINANCING;

Total GEF contributions to the project amount to USD 1,008,806 will be used to finance catalytic activities to build capacity on the integration of electric mobility solutions with renewable energy solutions, prove concepts and provide strategic inputs to achieve GHG emissions reductions. The additional cost of the project is to demonstrate how low-carbon mobility solutions can play a role within national decarbonisation strategies and policies, strengthening the supply of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions integrated with renewable energy solutions, and stimulating the demand of electric battery services and related technologies at community and national level, through the implementation of demonstration pilots.

In order to facilitate and accelerate the adoption of electric mobility solutions, the proposed GEF/UNIDO project will take a systematic approach combining technical and financial assistance to introduce e-mobility solutions in the transport sector couple with renewable energy ones, overcoming the current barriers through the coverage of the following incremental costs. For PC1 GEF financing will support the development of a roadmap for upscaling of low-carbon maritime transport solutions and create government leadership groups to promote a better coordination and a joint approach to overcome the challenges and take advantage of opportunities resulting from the adoption of electric mobility and associated renewable energy solutions. Co-financing plays an important role to ensure that low-carbon maritime mobility solutions are well institutionalized within national transport structures and mechanisms.

Presently, there are just a few e-mobility solutions introduced in Cabo Verde and none that aim to address transport and lack of energy issues in remote villages as a combined solution. The GEF financing in PC2 will be used to introduce Cabo Verde to many new energy- and transport-related technologies that are expected to play important roles in Cabo Verde's future through the implementation of infrastructure for the charging of electric batteries; contribute to the development of

standardized specifications that will bring about many efficiencies in the supply and maintenance of the new technologies; and build awareness and capacity about these technologies and the standardized specification, in support of the implemented demonstration projects and so that the country can become self-sufficient in maintaining the new technologies. In PC3 the GEF financing will be used to stimulate the demand of electric battery services by demonstrating the benefits of low-powered, battery-swap electric marine vessels and shared access to electric marine propulsion systems and encourage their adoption as well as by compiling information on the implemented demonstration projects and sharing that information with the public so to prepare the marketplace for the uptake of these technologies. GEF financing in PC4 will be used to adopt a quality project management system that will ensure that the project is implemented on time and within the budget with quality.

The proposed project will bring about earlier awareness of them and earlier national-scale uptake, with many benefits associated with this

The project will be co-financed by the Government of Cabo Verde through the MICE, Ministry of the Sea, IMAR and ENAPOR. Besides, it is envisaged that the project will also receive co-finance from the private sector, municipalities and international organizations. In addition, it is expected that the project will attract input from standards organisations, battery developers, and small format vehicle developers during its implementation. The proposed GEF/UNIDO project aims to set the stage for future provision of energy and mobility. The project's focus on a village setting is due to the additional benefits to be realized, but the methods and systems are applicable to the urban environment as well. Hence the scaleup opportunities are immense, with global application, and beyond only SIDS. Even considering Cabo Verde only, Cabo Verde imported US\$320M in refined petroleum in 2020^[54], over 80% of which was used for electricity generation or transport. A project-triggered change resulting in a 10% reduction in such imports would provide an annual savings in the cost of fuel imports of around US\$29M. This change will not be triggered without the implementation of this proposed GEF/UNIDO project.

6) GLOBAL ENVIRONMENTAL BENEFITS (GEFTF)

As per the GEF, the Global Environmental Benefit in the Climate Change Mitigation Focal Area is the sustainable mitigation of the concentration of anthropogenic greenhouse gases (GHG) in the atmosphere. The project intervention will contribute to climate change mitigation since GHG would be reduced due to the replacement of diesel-fuelled vehicles and systems with e-mobility solutions and renewable energy systems. GHG emissions in the form of CO₂ (carbon dioxide) from diesel combustion (fossil energy resources) are expected to be avoided or reduced through the use of these low-carbon energy generation solutions. The electric mobility solutions are expected to be adopted by small maritime vessels (tourism and fisheries) as well as for road transport, reducing the consumption of fuel that is used by these transportation modes. Renewable energy will be generated using solar energy resources available in the country to charge the electric batteries that will be used in the different transportation systems in the country

GHG Emissions Reduction Estimate as Global Environmental Benefit

The introduction and use of each e-outboard is expected to result in the immediate avoidance of consuming 3,700 litres of gasoline per year.^[55] (Carriage of the fuel to the village also adds a factor of around 15% for Monte Trigo^[56], and around 4% for São Pedro associated with the carriage of fuel to the fishing villages^[57]). Using an emissions factor of 2.75 kgCO₂e/litre for gasoline (GEF^[58]), this is 10.44 t CO₂e avoided per year, per e-outboard operating in Monte Trigo, and 9.44 t CO₂e avoided per year, per e-outboard operating in São Pedro.

The proposed pilots aim to introduce 5 e-outboards in Monte Trigo and 15 in São Pedro. Although the first year may not see significant e-outboard use due to the time taken for procurement and deployment) and considered over the first ten (10) years, the total GHG emission avoided would be expected to be of the order of 1,940 tCO₂e (i.e., 10.44tCO₂e/y x 5 e-outboards + 9.44 tCO₂e/y x 15 e-outboards x 10 years each).

In addition, three e2Ws and three e3Ws are proposed to be made available at São Pedro on a multiple-user, shared access basis, this making the most of the available swap batteries (and their times of operation and battery requirements expected to not require additional batteries to be added to those provided for the fishing vessels) and also providing a demonstration of small format e-mobility. The litres of petrol avoided by their use has been based on each of the e2W and e3W making two round trips to Mindelo six days a week, and each e2W trip avoiding 1/4th of the use of the current petrol vehicle providing the same service, and 1/2 in the case of a e3W.^[59] Using an emissions factor of 2.75 kgCO₂e/litre, this is 3.9 tCO₂e per year avoided for each e2W and 7.7 tCO₂e avoided per year for each e3W.

Considered across the e-outboards, e2Ws and e3Ws, the resulting direct emissions reduction for a 10-year deployment is 2,050 tCO₂e.

It is expected that this would limit early copy-adoption to the order of 20%-30% of the artisan fishing fleet – around 540 vessels if taking the midpoint of this. Using an average of the two results for the per e-outboard GHG emissions avoided of 9.9t/y, this suggests indirect emission reduction of around 5,400 tCO₂e per year (or 54,000 tCO₂e for a 10 year deployment).

Indirect emission would also come for any switch from petrol vehicle use to e2W and e3W use. There appears to be significant opportunity for the use of two- and three-wheelers, despite no significant history of this. Because of this low utilisation, it is suggested that e2W and e3W use would be slow to penetrate land transport. Assuming 5% penetration, a potential for 10,000 tCO₂e per year avoided by the use of small-format e-mobility, with the project providing the trigger for this.

There is also the potential for indirect emissions reduction to be achieved where the control of the charging station makes it possible to introduce other solar generation through improvements in grid stability. Assuming one 20-bank of swap batteries is used for this, this could enable around 34kWp of additional solar generation to be added to the grid than would otherwise be possible, which could

displace around 56,000 kWh of diesel generation per year^[60] ? avoiding the emission of around 82 t CO₂e per year^[61].

This data has been summarized in the following table, rounding the figures as appropriate.

Table 5: Direct and indirect GHG emission reductions

Source of GHG emissions avoided:	t/y CO ₂ e avoided	10-year project
Direct Emissions		
5 e-outboards Monte Trigo	52	522
15 e-outboards S?o Pedro	142	1,416
e2Ws S?o Pedro	3.9	39
E3Ws S?o Pedro	7.7	77
Total direct emissions reduction (rounded)	206	2,054
Indirect Emissions		
540 e-outboards (rounded)	5,400	54,000
Potential small-format e-mobility	10,000	100,000
Potential added grid RE	82	820
Total indirect emissions avoided	15,482	154,820

7) INNOVATIVENESS, SUSTAINABILITY AND POTENTIAL FOR SCALING UP.

This GEF/UNIDO project proves its innovativeness, sustainability and scaling-up potential through its strategic components:

Innovativeness: The innovativeness of this GEF/UNIDO project relies on its targeted technology: electric mobility solutions for both maritime and road transport coupled with supporting infrastructure supplied through renewable energy. Through the proposed GEF/UNIDO project many new technologies that have not been seen before in Cabo Verde and that are not well understood, will be introduced in the country. This will leap Cabo Verde into the use of currently novel systems and

solutions for electricity supply and mobility. These new ways are expected to have a follow-on effect of seeding innovation in other sectors as well. Specific innovations that the project will introduce or enable include:

- ? Battery swapping, accessed through automatic battery charging and swapping stations in combination with an access app.
- ? Electrification of marine vessels through the use of electric outboards and battery-swap batteries, both accessed via a shared-asset app.
- ? The introduction of small format battery swap vehicles, accessed via a shared-asset app.
- ? The standardized specification of powertrain components to provide for easier servicing, reduced wastage, smaller parts inventories, and enabling innovation in the local marketplace in the form of modification of small format vehicles through to local assembly of the small-format vehicles using imported, generic drivetrain components.
- ? The introduction of 'last-mile' electricity reticulation through battery swapping.
- ? The introduction and use of low voltage solar electricity generation systems.
- ? The introduction of modern policy planning methodologies.

Also very innovative and important for such a small and scattered country is the fact that the project aims to use the same battery set for several different transportation modalities as well as solution for electricity provision. Furthermore, the definition of this standardized specification of electrical components is expected to reduce waste through avoiding the need for extensive parts inventories to be held, making repair more efficient and predictable, and enabling economic repair of power electronics and motors.

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

Under PC1 the project is going to establish the SMTU (Output 1.1.1) and develop the roadmap for up-scale of low-carbon maritime transport and related solutions (Output 1.1.3). It is expected that once the project is completed, the established SMTU will keep operating and that the validated roadmap is implemented. This is ensured by building of the SMTU and other government agencies interested in the low-carbon energy and transport solutions as well as developing and validating the roadmap with the Ministry of the Sea and MICE, institutions that will be responsible for their implementation.

It is expected that the demonstration projects implemented under PC2 and PC3 will be maintained after the project comes to an end, as underlying and sustaining the utilization/operation of the electric mobility and energy solutions implemented, there will be a financial/business model defined for Cabo Verde remote villages (that considers the willingness to pay of the population) that will allow these solutions to be self-sustained. Furthermore, the installation of a centre to support the leasing/renting of the batteries, associated with the provision of training to the staff of the centre on how to manage

properly the batteries, will ensure that the batteries will last longer (and after the project finishes) and once damaged, that they will be appropriately decommissioned.

It is in fact expected, that the proposed project will ensure future market of the proposed low carbon energy and mobility solutions driven by: (i) the business model defined for the use of the proposed new technologies that are expected to provide more accessible and lower cost electricity in off-grid settings and more accessible and more affordable transport in a variety of settings (benefitting specially the most remote village); (ii) the costs and threat of disruption to fuel supply; and (iii) the implementation of policy and the developed roadmap under PC1.

The proposed GEF/UNIDO project will contribute to improve environmental sustainability of the energy and transport sectors, as it focused on establishing new, low-carbon technologies in Cabo Verde for energy supply and transport, substituting fossil-fuels powered ones. Further, the standardized specification of electrical components is expected to reduce waste through avoiding the need for extensive parts inventories to be held, making repair more efficient and predictable, and enabling economic repair of power electronics and motors.

In addition, social sustainability will be strengthened due to the systematic gender and youth mainstreaming throughout the project cycle.

Potential for scaling-up:

Even though the proposed project will target demonstration of the new technologies in remote villages, this is because there are added benefits to be realized in such settings. However, apart perhaps from battery swapping to provide premise electricity supply, the new technologies that will be introduced are applicable to almost any SIDS setting and a significant uptake of the new technology solutions is expected. Thus, the project has a strong potential for scaling up.

Take the example of vehicle sharing: There is a global trend towards the use of shared vehicles and commentators predict that vehicle sharing will become the predominant means by which people will access self-drive vehicles. The proposed GEF/UNIDO project will introduce the vehicle-share concept across a fleet of small-format electric vehicles that are provided for the village as a whole to use. This makes sense in a village setting as the vehicles are relatively seldomly used to the point that low utilization is a deterrent to self-owning a vehicle. Cabo Verde will likely follow globally trends eventually and the demonstration of vehicle sharing will make it easier for uptake due to the familiarization realized.

The scene will be set for there to be a very high likelihood of successful scale up of the various technologies demonstrated. For example, the SMTU will be provided with the necessary tools, roadmap, and capacity development to deliver on that roadmap and keep it current. Likewise for the scale up of land-based low voltage mobility and related low voltage systems. In line with good practice roadmap techniques, the private sector will also be provided roles to ensure long-term, program robustness.

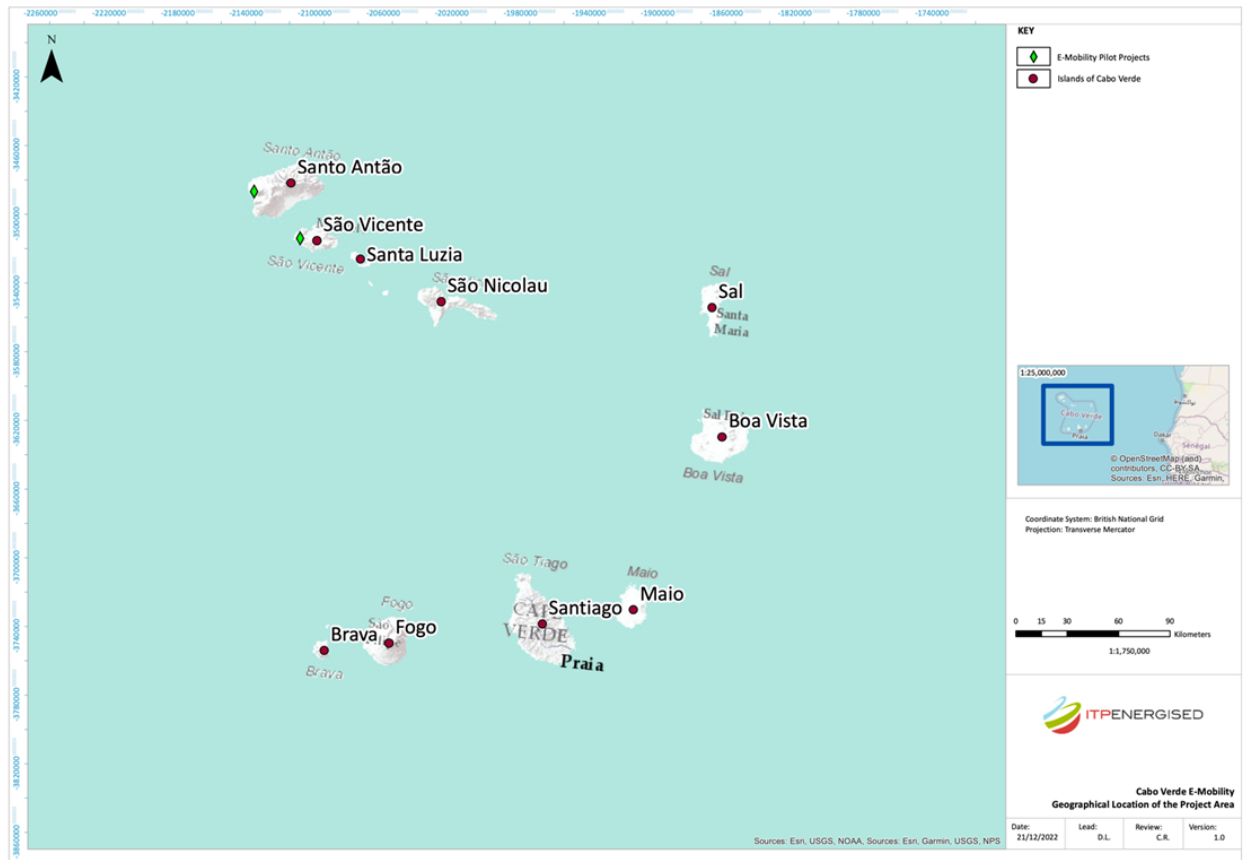
- [1] World Bank database, 2021
- [2] INECV, 2018
- [3] CIA World Fact Book, 2021
- [4] OECD, Sustainable Ocean Economy: Country Diagnostic of Cabo Verde, 2022
- [5] <https://climateknowledgeportal.worldbank.org/country/cape-verde/climate-data-historical>
- [6] Cabo Verde NAP, <https://unfccc.int/documents/619920>
- [7] <https://climateknowledgeportal.worldbank.org/country/cape-verde/climate-data-historical>
- [8] <https://climateknowledgeportal.worldbank.org/country/cape-verde/climate-data-historical>
- [9] <https://climateknowledgeportal.worldbank.org/country/cape-verde/climate-data-historical>
- [10] Cabo Verde NAP, <https://unfccc.int/documents/619920>
- [11] Estimated from the WB CCKP, <https://climateknowledgeportal.worldbank.org/country/cape-verde/impacts-sea-level-rise>
- [12] SSPs are meant to provide insight into future climates based on defined emissions, mitigation efforts, and development paths. More detail on these scenarios and what they represent is included in Appendix 1.
- [13] <https://climateknowledgeportal.worldbank.org/country/cape-verde/climate-data-projections>
- [14] Germanwatch, ?Global Climate Risk Index 2021?, 2021
- [15] Cabo Verde NAP, <https://unfccc.int/documents/619920>
- [16] <https://climateknowledgeportal.worldbank.org/country/cape-verde/vulnerability>
- [17] <https://thinkhazard.org/en/report/47-cape-verde/CF>
- [18] <https://thinkhazard.org/en/report/47-cape-verde/CF>
- [19] <https://climateknowledgeportal.worldbank.org/country/cape-verde/vulnerability>
- [20] Minist?rio da Agricultura e Ambiente, Cabo Verde (2021) Cabo Verde: 2020 Update to the first Nationally Determined Contribution (NDC)
- [21] DNE M (2017) Base de dados dos Registos das Embarca??es e de Pescadores
- [22] Fortes, D. (2019) Assessment of economic viability of the artisanal fisheries in Cabo Verde
- [23] Ministry of Industry, Trade and Energy (2019)

- [24] Ministry of Industry, Trade and Energy (2019)
- [25] [World Bank Open Data](#), 2022
- [26] Electricity lawyer [?SSA E-mobility Toolkit?](#), 2022
- [27] [NAMA Facility](#), 2020
- [28] Minister of Agriculture and Environment (2020) [Cabo Verde: 2020 Update to the first Nationally Determined Contribution](#)
- [29] World Bank
- [30] SE4ALL, 2015. [Action Agenda Sustainable Energy for all ? Cape Verde](#)
- [31] SE4ALL, 2015. [Situation Analysis of Energy and Gender Issues in ECOWAS Member States](#)
- [32] IFAD (2021) [Country profile](#)
- [33] DNE M (2017) Base de dados dos Registos das Embarca??es e de Pescadores
- [34] Fortes, D. (2019) [Assessment of economic viability of the artisanal fisheries in Cabo Verde](#)
- [35] The Ministry of Industry, Commerce and Energy (2019) [Cabo Verde?s Strategic Plan for Sustainable Development \(PEDS\)](#)
- [36] The Government of Cabo Verde, 2018 ? [The Mid - Atlantic Gateway to the World?s Economy: Energy sector](#)
- [37] <http://tda-mobility.org/wp-content/uploads/2019/04/Cabo-Verde-Electric-Mobility-Policy-Chapter.pdf>
- [38] Minister of Agriculture and Environment (2021) [Cabo Verde: 2020 Update to the first Nationally Determined Contribution](#)
- [39] Cabo Verde National Adaptation Programme of Action 2007-2012 (NAPA, 2007) extracted at: <http://unfccc.int/resource/docs/napa/cpv01.pdf> GEF6 CEO Endorsement /Approval Template-August2016
- [40] https://unfccc.int/sites/default/files/resource/NAP_Cabo%20Verde_EN.pdf
- [41] https://unfccc.int/sites/default/files/resource/0136895_Cabo%20Verde-NC3-1-Cabo%20Verde%20-%20Third%20National%20Communication%20on%20Climate%20Change.pdf
- [42] https://www.mercuryconvention.org/sites/default/files/documents/minamata_initial_assessment/Cabo-Verde-MIA-2018.pdf

- [43] <http://faolex.fao.org/docs/pdf/cvi194850.pdf>
- [44] <https://open.unido.org/projects/CV/projects/170071>
- [45] <https://open.unido.org/projects/CV/projects/170001>
- [46] <https://open.unido.org/api/documents/15759145/download/Brochure%20WACQIP.pdf>
- [47] <https://www.thegef.org/what-we-do/topics/coastal-fisheries-initiative>
- [48] <https://www.thegef.org/projects-operations/projects/9126>
- [49] <https://www.thegef.org/projects-operations/projects/9705>
- [50] <https://www.thegef.org/projects-operations/projects/9774>, <https://www.thegef.org/projects-operations/projects/10655>
- [51] <https://sgp.undp.org/component/countrypages/?view=countrypage&country=32&Itemid=>
- [52] <https://www.thegef.org/projects-operations/projects/10865>
- [53] <https://www.greenclimate.fund/sites/default/files/document/20220226-cabo-verde.pdf>
- [54] OEC, World (<https://oec.world/en/profile/bilateral-product/refined-petroleum/reporter/cpv>).
- [55] Based on each e-outboard providing 749 hours of cruising operation per year (based on a 6 days a week operation, 52 days a year and 2.4 hours cruising per day), each hour avoiding 4.0 litres of fuel consumed by a two-stroke petrol outboard, plus avoiding an additional 10% fuel consumption from added (non-cruising) idling during a fishing trip (whereas an electric outboard would be simply turned off), equals 3,707 litre per year avoided.
- [56] Based on an 86km round road trip by petrol-fuelled vehicle carrying 250kg of fuel from the closest supply (Porto Novo) plus ferry by boat from Tarrafal de Monte Trigo.
- [57] Based on a 26km round road trip by petrol-fuel vehicle carrying 250kg of fuel from the closest supply (Mindelo).
- [58] https://www.thegef.org/sites/default/files/council-meeting-documents/C.39.Inf_.16_STAP_-_Manual_for_Calculating_Greenhouse_Gas_Benefits_0.pdf
- [59] Based on a payload of 500kg for a e3W whereas the current petrol vehicle providing the service has a payload of around 1,000kg.
- [60] i.e., 34 kW x 4.5 hours x 52 weeks/y x 7 days/week.
- [61] i.e., 56,000kWh x a diesel generation emission factor of 1.47 kg CO₂e/kWh (which includes consideration of typical grid losses).

1b. Project Map and Coordinates

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



1. Monte Trigo (Santo Ant?o Island): 17.021208, -25.316973 GEO Name ID- 3374213

2. S?o Pedro (S?o Vicente Island): 16.835750, -25.066449 GEO Name ID- 3374197

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

N/A

2. Stakeholders

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

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The introduction of new low-carbon energy and transportation technologies 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 project preparation phase (PPG) as well as of project implementation phase.

During the preparation of the project (PPG)

During PPG Cabo Verdean and international stakeholders were engaged in the definition of the activities to be implemented in the project and in the identification of the low-carbon energy and transport demonstration projects and in the analysis of their feasibility. This was carried out through: (i) electronic questionnaire that distributed to a large group of stakeholders; (ii) face-to-face individual meetings; and (iii) direct consultation by e-mail or phone or teleconference. These were carried out throughout the project duration by the Consultant team, which includes international consultants and a national consultant allowing a constant engagement with the stakeholders

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

Public sector / Government Institutions: Ministry of Industry, Trade and Energy (MICE); Directorate General of Industry, Trade and Energy (DNICE); Ministry of the Sea; IMAR; Quality Management Institute and Intellectual Property (IGQPI); National Agency for Water and Sanitation; FAO; National Port Administration Company (ENAPOR)

Donors/International Cooperation: UNDP/GEF/SGP; WB; LuxDev

Regional Institutions: ECREEE

Financial Institutions: Caixa Econ?mica de Cabo Verde

Academic/training institutions: UNI-CV; EMAR-School of the Sea; UTA ? Atlantic Technical University; CERMI

Private Sector: ?guas de Ponta Preta (APP), FRESCOMAR SA, NORTUNA

Municipalities: Municipality of Porto Novo (CMPN); S?o Vicente Municipality (CMSV);

Non-Governmental Organisations (NGOs)/ Associations: Association of Monte Trigo Community (AGRIPESCA); Association of Fishers in S?o Pedro; LANTUNA

Other: Independent Consultant in Environment and Natural Resources

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

During project implementation

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

Table 6: Stakeholders? roles envisaged during project implementation

Stakeholder	Current role in the country	Envisaged role in the project
United Nations Industrial Development Organisation (UNIDO)	UNIDO is a UN specialised agency that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. It has conducted several projects and programmes in the country.	<p>Project Implementation Agency and Co-Executing Entity</p> <p>Oversees project execution to ensure good governance alignment with standards and GEF requirements. Reports and is accountable to GEF Council. Responsible for project cycle management, project management and evaluation and reporting on project?s impact achievement.</p> <p>UNIDO will also support the PMU with:</p> <ul style="list-style-type: none"> ? Preparation of procurement and recruitment plans; ? Terms of reference and procurement packages ? Management of output deliverables ? Providing technical assistance in the Design of battery swapping systems and e-mobility solutions

Ministry of Industry, Trade and Energy (MICE) through Directorate of Industry, Trade and Energy (DNICE)

The **DNICE** is responsible for the design, execution, and evaluation of energy policy (including electric mobility), as well as the presentation of proposals aimed at growth, improvement and increased productivity and competitiveness in the sector.

It is also responsible for ensuring the implementation of the industry, trade and energy development strategy, as well as encourage the creation of energy, industrial and commercial infrastructure.

The **MICE/DNICE** is nominated as the Lead Project Executing Entity (PEE) responsible for the overall project execution. It will contract other Project Executing Partners (PEPs) to support the execution of different project activities. It will monitor progress of all activities to ensure the Project is completed on time and to budget, as well as be responsive to and proactive about any potential adjustment or opportunities that arise that might further leverage the GEF grant for achieving additional global environmental benefits.

The **MICE/DNICE** will chair the PSC and will host the Sustainable Maritime Transport Unit (SMTU).

The **MICE/DNICE** will be involved in:

*Establishing the **Sustainable Maritime Transport Unit (SMTU)** under Output 1.1.1 and related activities under Output 1.1.2; Output 1.1.3.*

Supervising the infrastructure activities under Output 2.1.1; Output 2.1.2; Output 2.1.3; Output 2.1.4.

Supervise the awareness raising and information dissemination activities Output 3.1.1; Output 3.1.2; Output 3.1.3.

Coordinate the Monitoring and Evaluation activities under Output 4.1.1 and Output 4.1.2.

<p>Ministry of the Sea</p> <p>through the National Blue Economy Coordination and the General Directorate of Marine Resources</p>	<p>The Ministry of the Sea is responsible for studying, proposing and applying development policy in the field of fisheries, and the maritime sector generally.</p> <p>Its role is to coordinate maritime activities related to marine resource exploitation in Cabo Verde.</p>	<p>The Ministry of the Sea through the Blue Economy Coordination team and through its General Directorate of Marine Resources, will be a key entity in coordination with the Lead PEE, providing data and coordination with local fishing communities. The Ministry of Sea will also analyse synergies with the Blue Economy Program and analyse alignment with the Blue Economy Investment Plan for government co-funding.</p> <p>Member of the PSC and SMTU.</p> <p>The Ministry of the Sea will be involved in:</p> <p><i>Roadmap development and validation under Output 1.1.3.</i></p>
<p>Center for Renewable Energy and Industrial Maintenance of Cabo Verde (CERMI)</p>	<p>CERMI is a public entity that operates under the supervision of the Ministries of Energy, Finance and Vocational Training. The Center is specialized in developing curriculums and engaging organising capacity building events regarding renewable energy. Its mission is to promote knowledge and dissemination of technologies in renewable energy, energy efficiency and industrial maintenance. It is the operational arm of the Government for the materialisation of energy transition objectives and it implements energy policies.</p> <p>CERMI has provided capacity building support for GEF projects in Cabo Verde and other African countries.</p>	<p>CERMI will be a key entity in coordination with the PEEs, providing inputs and support for the capacity building activities of the Project.</p> <p>Member of the PSC and SMTU.</p> <p>CERMI will be involved in:</p> <p><i>Design of the capacity building programme and development of training materials tailored for the several government agencies? needs in Cabo Verde under Output 1.1.2.</i></p>
<p>Association of Monte Trigo Community (AGRIPECA)</p>	<p>AGRIPECA is a fish community association established in 2012 in Monte Trigo, Cabo Verde.</p>	<p>AGRIPECA and Association of Fishers in S?o Pedro will be involved in data collection, stakeholder engagement, capacity-building and in identifying needs of fishing communities as well as identification of project demonstration pilots.</p>
<p>Association of Fishers in S?o Pedro</p>	<p>Association of Fishers in S?o Pedro is a Fish community association established in 2002 in S?o Pedro, Cabo Verde.</p>	<p>Members of the PSC and SMTU.</p>

Villages and Artisanal fishing communities targeted by the Project (Monte Trigo and S?o Pedro)	N/A	Villagers and local fishing communities will assist with the implementation of pilot projects with the support of the Lead PEE and also be part of the awareness and capacity-building envisioned by the Project and in propulsion of scale-up initiatives.
The Cabo Verde Institute for Gender Equality and Equity (ICIEG)	The ICIEG promotes the awareness of gender-based violence and provides technical support and trainings to institutions and for the development of relevant projects.	<p>The ICIEG will guide, when requested, the SMTU members, ensuring gender and youth considerations are analysed an integrated, mainstreamed and tracked into the implementation of project activities</p> <p>Member of the PSC.</p>
ECOWAS Center for Renewable Energy and Energy Efficiency (ECREEE)	The ECREEE has the mandate of strengthening support for and the development of economic and technological infrastructure in the realm of renewable energy and energy efficiency for sectors such as transportation, water and power in Economic Community of West African States (ECOWAS) region.	<p>ECREEE will be a key entity in coordination with the PEEs, providing inputs and support for the capacity building activities of the Project.</p> <p>Member of the PSC and SMTU.</p> <p>ECREEE will be involved in:</p> <p><i>Design of the capacity building programme and development of training materials tailored for the several government agencies? needs in Cabo Verde under Output 1.1.2.</i></p>

<p>Private &Public sector actors and electric utilities</p>	<p>The following is a brief list of those private &public sector actors and electric utilities:</p> <p>ENAPOR is the CaboVerdean Port Authority.</p> <p>APP is Spanish company supplying power and water to some hotels in the southern portion of the island of Sal and Monte Trigo.</p> <p>Electra SA is a state-run company supplying water and electricity, which was established in 1982.</p> <p>Cabeolica SA is a wind power IPP, which was established in 2008 as the first renewable IPP in sub-Saharan Africa financed by the Cabo Verde government, Electra SA, and private funds.</p> <p>Electric is an IPP founded in 2010 and is engaged exclusively in wind power generation.</p> <p>AEB is a government-controlled entity which is engaged in water and electricity business.</p>	<p>They will be consulted for the roadmap definition under Output 1.1.3 and will be directly engaged in the training workshops under Output 3.1.1 and Output 3.1.3. They will also be engaged during the implementation phase through the participation of specific private & public sector actors and electric utilities in stakeholder meetings.</p>
<p>? ENAPOR</p>		
<p>? APP</p>		
<p>? Electra SA</p>		
<p>? Cabeolica SA</p>		
<p>? Electric</p>		
<p>? AEB</p>		

<p>Private Companies and Cooperatives /Associations:</p> <p>? Frescomar</p> <p>? Nortuna</p> <p>? ADAD</p> <p>? ANMCV</p>	<p>The following is a brief list of those private companies and cooperatives /associations:</p> <p>Frescomar is a Cabo Verdean-Spanish private company that dedicate itself to the practice of fish processing and marketing, with Europe as its main market.</p> <p>Nortuna is a private company implementing initiatives in the fishing and aquaculture sector in Cabo Verde.</p> <p>ADAD is an association seeking the preservation of natural resources and the environment in general in Cao Verde.</p> <p>ANMCV is and association that regulates the municipalities and other applicable legislation, with headquarters in Praia, Cao Verde.</p>	<p>They will be consulted for the roadmap definition under Output 1.1.3 and will be directly engaged in the training workshops under Output 3.1.1 and Output 3.1.3. They will also be engaged during the implementation phase through the participation of specific private companies and cooperatives/associations in stakeholder meetings.</p>
<p>NGOs and CSOs</p> <p>? LANTUNA</p> <p>? BIOSCV</p>	<p>The following is a brief list of those NGOs and CSOs:</p> <p>LANTUNA is an NGO which aims to conserve and enhance the biodiversity in Cabo Verde.</p> <p>BIOSCV is an NGO for the conservation of the natural environment, with a deep knowledge of the ecosystems and species of Cabo Verde.</p>	<p>They will be consulted for the roadmap definition under Output 1.1.3 and will also be engaged during the implementation phase through the participation of specific NGOs and CSOs in stakeholder meetings.</p>

Other Government institutions/agencies	The following is a brief list of those other government institutions/agencies:	They will be consulted for the roadmap definition under Output 1.1.3 and will also be engaged during the implementation phase through the participation of specific government institutions/agencies in stakeholder meetings.
? The National Directorate of Environment/ the Ministry of Agriculture and Environment (MAA)	MAA is responsible for coordination, control, execution and evaluation of specific policies defined by the Government for the sectors of agriculture, forestry, livestock, agribusiness, food security, environment, water and sanitation.	
? Ministry of Tourism and Transport	The Ministry of Tourism and Transport is responsible for tourism activities and road transport in Cabo Verde	
? The Ministry of Finance	The Ministry of Finance is responsible for the arbitration of public funds, for fiscal policy and the mobilization of resources from international partners)	
? National Directorate of Fisheries and Aquaculture (DNPA)	DNPA is responsible for carrying out the support activities for the development of fisheries and aquaculture, as well as the articulation of research processes, valorization and sustainable exploitation of national marine resources.	
? Water and Waste Management Authority (ANAS)	ANAS is a public institute, which aims at the implementation of the national policy on water resources, which will secure equal access to water, as well as the monitoring of the activities of water supply and sanitation.	
? Interinstitutional Commission for Electric Mobility (CIME)	CIME is a governance instrument to support the Government in matters related to fostering the sustainable uptake of Electric Mobility in Cabo Verde.	
?		
? S?o Vicente Municipality (CMSV)		
? Porto Novo Municipality (CMPN)		

	civil protection, employment and vocational training, police and municipal investments in S?o Vicente and Porto Novo.	
<p>Academic, Research and Training Institutes:</p> <p>? School of Sea (EMAR)</p> <p>? Institute of Sea (IMAR)</p> <p>? National Institute of Fisheries Development (INDP)</p> <p>? National Institute of Water and Sanitation</p> <p>? National Tourism Institute</p> <p>? Institute of Employment and Professional Training (IEFP)</p> <p>? PROEMPRES A</p> <p>? Quality Management Institute and Intellectual Property (IGQPI)</p> <p>? Atlantic Technical University (UTA)</p> <p>? University of Cabo Verde (UNI-CV)</p> <p>? University Jean Piaget (UJP)</p> <p>? University of Mindelo</p>	<p>These are academic and research institutes as well as training institutions acting in Cabo Verde.</p> <p>? The academic institutions (UTA, UNI-CV, UJP and University of Mindelo) have programs relating to biodiversity conservation and maritime sustainability.</p> <p>? The research institutes (EMAR, IMAR, INDP, National Institute of Water and Sanitation and National Tourism Institute) have research projects that are applicable to the maritime sector.</p> <p>? The research institutes (IEFP, IGQPI and PROEMPRESA) have expertise on the areas of employment, entrepreneurship, and intellectual property as well as professional training.</p>	<p>INDP and UNI-CV are members of the SMTU and will provide support to activities under Output 1.1.2 and Output 1.1.3.</p> <p>They will be consulted for the roadmap definition under Output 1.1.3 and will be directly engaged in the training workshops under Output 3.1.1 and Output 3.1.3.</p> <p>They will also be involved in data gathering as well as engaged during the implementation phase through the participation of specific academic, research and training institutions in stakeholder meetings.</p>

<p>Other Regional Partners:</p> <p>? CAOPA</p> <p>? REPAO</p> <p>? TDA</p>	<p>The following is a brief list of those regional partners:</p> <p>CAOPA is an organization mainly focused on the promotion of sustainable artisanal fishing in Africa.</p> <p>REPAO is an organisation aiming at the formation of a network of fisheries stakeholders. The vision of this network is the sustainable conservation of fishery resources in West Africa.</p> <p>TDA is a unique collaboration among countries, cities, regions and companies to accelerate the worldwide transformation of the transport sector towards a net-zero emission mobility system before 2050.</p>	<p>They will be consulted for the roadmap definition under Output 1.1.3 and will also be engaged during the implementation phase through the participation of specific regional partners in stakeholder meetings.</p>
<p>Multi and bi-lateral development agencies:</p> <p>? WB</p> <p>? UNDP</p> <p>? GIZ</p> <p>? LuxDev</p> <p>? FAO</p>	<p>These are several international development agencies and multilateral organisations that have executed or are executing projects with which synergies with the Project could be explored.</p>	<p>They will be engaged during the implementation phase through the participation of specific agencies in stakeholder meetings.</p>
<p>Financial Institutions and Potential Investors:</p> <p>- Caixa Econ?mica de Cabo Verde</p>	<p>Caixa Econ?mica de Cabo Verde is a bank acting in Cabo Verde providing financial products such as grants and loans.</p>	<p>These financial institutions will support the co-financing of the project.</p>

Select what role civil society will play in the project:

Consulted only; Yes

Member of Advisory Body; Contractor;

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

UNIDO recognizes that gender equality and the empowerment of women have a significant positive impact on sustained economic growth and inclusive development of sustainable transport, key drivers of poverty alleviation and social progress. The UNIDO vision, as laid down in the 2019 Policy on Gender Equality and the Empowerment of Women (DGB/2019/16), is that women and men can equally lead, participate in, and benefit from inclusive and sustainable industrial development. Towards this vision, UNIDO follows a comprehensive approach to gender equality and the empowerment of women, recognizing the interests, needs and priorities of both women and men and the intersecting diversity of different groups. Moreover, UNIDO recognized the importance of involving vulnerable groups (incl. women of color, young women) and the economy and society at large (with a special focus on groups most affected by climate-prone natural disasters).

UNIDO has extensive experience in promoting and achieving gender sensitive impact, even in countries where gender inequality is systemic. A guiding principle of the project will be to ensure that both women and men are provided equal opportunities to lead, participate in, and benefit from the project. Special efforts will be made to promote equal participation of women and men, both at managerial and technical levels, as consultants and participants in all stages of project implementation.

A Gender Analysis (see Annex I) was conducted during the PPG phase to analyse possibilities for the project to utilize a gender responsive approach as well as to establish a gender baseline and develop gender-based targets. The analysis provides in-depth information on gender equality in Cabo Verde. It does so by firstly providing a baseline of all the relevant stats in reference to gender equality between girls and boys or men and women, i.e., years of education, access of assets, literacy, etc. Plus, the further analysis that includes more reflection on the sector that is relevant to the project will be developed and included into the gender analysis during project inception. The annex has used the UNIDO Gender Mainstreaming Tool and Data Collection tools from the gender analysis conducted by CARE. Both methodologies make use of questions such as *What is the context; Who does what? Who has what? Who decides; and Who benefits??* These questions have helped to conduct a thorough analysis of the gender analysis in Cabo Verde. In addition the gender assessment made use of the Gender Analysis Tool and Plan for E-Mobility projects.

The Gender Analysis has found that women in Cabo Verde face challenges due to continued imbalances in their financial status and security. Statistics clearly show gender inequality regarding the

income in Cabo Verde. For instance, while GDI is 0.981, placing the country into Group 1, the estimated female GNI per capita in women is almost 40% less than the male GNI per capita. This index reflects the inequality in achievement between women and men regarding three dimensions: reproductive health, empowerment and the labour market. It ranges from zero (0), where women and men fare equally, to one (1), where one gender fares as poorly as possible in all measured dimensions.

In terms of design, the project was designed to ensure that both women and men (including staff in institutions, experts, audience, speakers and panellists at events, or where relevant in communities benefiting from the e-mobility pilots) are provided equal opportunities to lead, participate in and benefit from the project. As general rule for the proposed GEF/UNIDO project, a target of **50% women participation and 30% of youth** in applicable activities will be sought. In practical terms, this will be demonstrated in a multitude of ways:

? **During the PPG a Gender Analysis report and a gender mainstreaming action plan** were prepared for this project and sex-disaggregated targets and indicators for applicable activities were defined and included in the Project Results Framework (Annex A). During project inception, the Gender Analysis and the gender mainstreaming action plan (including the gender responsive targets and indicators) will be validated and approved by the PSC, and during project implementation they will be monitored.

? **Gender-sensitive recruitment** will be practiced at all levels where possible, especially in selection of project staff, researchers and experts, as well as technical staff. Gender-responsive TORs will be used to mainstream gender in the activities of consultants and experts. In cases where the project does not have direct influence, gender-sensitive recruitment will be encouraged. Furthermore, whenever possible existing staff will be trained, and their awareness raised regarding gender issues.

? Existing and new staff will be trained, and their **awareness** raised on gender issues when possible.

? Gender dimensions will be considered when data collections or assessments are conducted as part of project implementation. In fact, whenever applicable and possible **sex and age-disaggregated data** collection and analysis of gender involvement will be performed. For example, as part of Environmental and Social Impact Assessments. Research, data and assessments will consider gender and age differentiated needs of women and men from different social groups.

? Gender dimensions will be considered in all **decision-making processes**. With respect to project management (PSC) and the SMTU meetings will aim to be gender balanced and to extend invitations to observers who represent gender dimensions, such as organizations / associations promoting gender equality and advocating women's empowerment. During project implementation, efforts will be made to focus on gender equality and women's empowerment issues when conducting stakeholders' consultation activities, in particular during policy review and formulation.

? At project management level, the PSC will make efforts to be **gender balanced** and/ or during meetings will invite observers to ensure that gender dimensions are taken into consideration. At the level of project activity implementation, effort will also be made to consult with stakeholders focusing

on gender equality and women's empowerment issues, whenever applicable. This is especially relevant in policy review and formulation.

? Efforts will be made to promote **participation of women in training activities**, both at managerial and technical levels, as participants and trainers. This can include advertising of the events to women's technical associations, encouraging companies to send female employees, provide childcare and safe transport, offer scholarships or reduced fees for women, adjusting TOR for selection of the trainers, etc.

? The project will pursue thorough **gender-responsive communication** and ensure stakeholder involvement at all levels, with special regard to involving women and men, as well as civil society and non-governmental organizations promoting gender equality. This will mitigate social and gender related risks, promote gender equality, create a culture of mutual acceptance, and maximize the potential contribution of the project to improving gender equality in the energy field.

? To mitigate a potential risk that only well-educated and urban women will benefit from the project, the project will look to include competition categories that are targeted at rural and which include technology areas that women are currently working in.

The planned project outcomes will be enhanced by considering gender equality and women's empowerment and by adopting a gender lens at high-level decision-making bodies and forums, and within planning and developments relating to sustainable transport, as follows:

? In PC1, the consultations for the development of the roadmap will be gender sensitive and the roadmap itself will be gender-sensitive and will include sex-disaggregated targets where appropriate. Women's organizations will also be invited to the validation workshop. In addition, at least one (1) of the members of the SMTU will be appointed as the Gender Focal Point to ensure that the relevant project interventions are gender responsive. Women participation in the meetings and training workshops under PC1 will be incentivised and these activities have assigned women participation targets.

? The focus of PC2 and PC3 is the successful implementation demonstration-scale pilot project. During the PPG, the project team consulted with the women associations and local community of the pilot projects to not only integrate the needs of women and youth into project design but also provide equal opportunities for women and men to lead, benefit from and participate in the demonstration-scale pilot projects.

? Events and training activities under PC3 have women participation targets and women's training needs will be considered following consultations with local women's organizations. Women participation in these events will be incentivised by the PMU.

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

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

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

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

During the PPG phase, private sector stakeholders' interests in electric mobility were consulted to collect their input on how best to implement the strategies and targets of the project and have been taken into account in the design of the project activities. A list of the Private Sector Stakeholders engaged at the PIF stage is provided on the Section 2. Stakeholders)

During project implementation the private sector is expected to be involved in the implementation of all PCs and will directly benefit from them. In practical terms, the private sector will:

? be consulted under PC1 within the development of the roadmap and will be directly engaged in capacity building and training undertaken under PC2 and PC3.

? be invited to participate in PSC and the NTCU meetings and in stakeholders consultation meetings carried out by the proposed GEF/UNIDO project

? provide co-finance for the implementation of project activities, namely, activities within PC2 and PC3.

? benefit across the full spectrum of the villages' infrastructure project, as the private sector will be the one supplying the technologies and materials and possibly the one that will be managing the services underlying the deployment of the demonstration projects.

? be involved in the development of innovative mechanisms that will be supplied to the identified communities, and that can continue to be supplied to other communities in which the validated commercial-based solutions can be supplied to.

? benefit from business creation, as through the validation of the demonstration technologies, that can be deployed in other Cabo Verde islands and /or in other SIDS.

The project will benefit from UNIDO's extensive experience and the ability to leverage investment from private sector actors, through the establishments of a sectoral approach.

Further details on the expected involvement of private sector stakeholders can be found on Section 2. Stakeholders and on the SEP (Annex K).

5. Risks to Achieving Project Objectives

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):

Table 7: Risks and Mitigation Actions

Risk	Risk Level	Risk Description / Mitigation Action
Political and institutional risk	Low	<p>Risk: Lack of support and engagement of ministries and institutions in the implementation of the project.</p> <p>Mitigation: The project has been involving key ministries and institutions in the project design, both at PIF and PPG, to ensure project is aligned with the political and institutional agendas in term of e-mobility and renewable energy. The project includes extensive stakeholder engagement activities with relevant institutions at nation, municipal and local levels aimed at ensuring the success of project implementation. In addition, the project includes specific activities under PC1 that will contribute to the creation of a specific unit ? the SMTU ? that will deal with e-mobility transportation solution for the maritime sector , capacity development for interested government agencies as well as the establishment of a roadmap to upscale the adoption of low-carbon energy and maritime transport solution in Cabo Verde, that will strengthen the institutional and political framework of Cabo Verde regarding e-mobility.</p> <p>The promotion of e-mobility in the transport and fishing sectors is in line with Cabo Verde?s energy policy and its commitments under the Paris Agreement. The Cabo Verdean Government has an ambitious strategic vision for the adoption of electric mobility in the country and the implementation of a public charging infrastructure. Thus there is political will of all political parties and ruling governments in finding solutions to energy independence.</p>
Institutional and regulatory framework risk	Low	<p>Risk: There is a risk in delays in the proposed improvements to institutional and regulatory frameworks by public institutions</p> <p>Mitigation: The project was designed so that the activities that will be implemented ? pilot projects, capacity building actions, etc ? can be implemented with and without the adoptions of improvements to the institutional and regulatory frameworks. Also the draft policies will be developed by external consultants through intensive stakeholders engagement, ensuring in this way that these are developed quickly and are aligned with the stakeholders needs and expectations, and thus expected to be adopted quickly by the government once developed.</p>

Institutional risk	Low	<p>Risk: Limited absorptive capacity by national counterparts.</p> <p>Mitigation: The project will provide capacity building, and awareness raising / information dissemination to the key stakeholders as an ongoing process throughout the project implementation period to ensure that staff are comprehensively trained, and the sustainability of the project is ensured.</p>
Financial Risk	Medium	<p>Risk: Lack of participation from co-finance partners (public and private) and lower level of co-finance raised for the project.</p> <p>Mitigation: The activities of the project were design in a way that it can be implemented with low levels of co-finance from co-funding partners (e.g, the pilots) and so that the new technology solutions that are introduced are financially attractive to users, to ensure a good uptake of the use of the technologies after project projects finishes. In fact, the successful implementation of the demonstrations is not highly dependent upon gaining the support of local co-financing entities.</p> <p>Nonetheless, UNIDO is in contact with Caixa Econ?mica de Cabo Verde and BAI, and these institutions demonstrated interest is supporting the pilots financially once the exact financial need are identified in the Feasibility Studies (that will be developed during project implementation).</p> <p>Close monitoring of financial risks and an open dialogue with co-financers will be applied during the project implemented by the PEE.</p>
Management risk	Low	<p>Risk: risk of project not being implemented on time and within budget</p> <p>Mitigation: Proper coordination will be ensured through the establishment of the PMU, the SMTU and the Project Steering Committee (PSC). Throughout the project implementation, support will be provided by PMU and UNIDO to ensure effective coordination between the key project stakeholders. Keeping the several parties informed about project progress through different communication channels, including the Project Website that will be created as part of the project, is useful to aid the coordination of efforts and activities. Also, at the project start, more specifically at the Inception Meeting, the roles and responsibilities that each party will play should be stated and recorded in the Inception Meeting Report. In addition, monitoring and evaluations activities are planned to take place throughout the project which will allow the quick identification of any issues that might arise and their quick mitigation.</p>
Technology risk	Medium	<p>Risk: the introduction of new technologies such as the ones in this project carried out a risk that they may not be suitable for the location and use intended.</p> <p>Mitigation: The specification of the new technologies and project management to be adopted during the proposed project will allow the identification of any issues that may arise early in their deployment and use. Further, despite the demonstration of many technologies, the demonstrations will be designed so that there are fallback options such that an issue with the deployment of one new technology solution does not prevent the demonstration of another. For example, should the automated battery swap station prove difficult to commission, then a manual battery charging arrangement will be deployed so that there are charged batteries available for the vehicle demonstration, for example.</p>

Environmental and social risk	Low	<p>Risk: Environmental and social impacts may arise from the implementation of the proposed project that can pose risks to the local ecosystems</p> <p>Mitigation: the project contemplates an ESMP (Annex J) that was developed during the PPG stage where the risk potential of the different activities of the project are assessed and mitigation measures to be adopted during project implementation contemplated. Also the selection of the pilot projects to be implemented took into account the environmental and social risks that they will pose. It is important to refer that: (i) this project aims to reduce the GHG emissions from transportation modalities that use fossil fuel, having it-self a positive impact on the environment as it is contributing to reduce climate change; and (ii) by adoption one (1) batterie solution that fits several different uses, the project aims to contribute to reduce the amount of waste that needs to be appropriately managed.</p>
Inadequate battery disposal	Medium	<p>Risk: In case batteries are not disposed properly, toxic chemicals may contaminate the soil and water affect wildlife and humans? health</p> <p>Mitigation: This risk will be mitigated through awareness raising of local communities and government on appropriate waste management. It is foreseen that the batteries will be appropriately recycled or reused at its end of life (for example, used for fixed electric storage for domestic and industrial purposes following the E-Mobility Charter (Resolution n.13/2019 from February First). The Recommendations as well as other for appropriate disposal of waste (including batteries) have been included on the project?s ESMP (Annex J).</p>
Lack of participation by villagers	Low	<p>Risk: Lack of participation from villagers</p> <p>Mitigation: the location of the pilots during the PPG was selected carefully having in mind the needs of the villagers and the different users that the technologies to be demonstrated could have. In addition, key importance was placed on the pricing for access to the batteries, small-format electric vehicles and electric outboards, due to the importance placed on the demonstration of the new technology solutions. In this respect the project is a demonstration and not a test of business models using commercial terms. In addition, the fact that the two villages already have access to electricity may pose a risk on the level of participation from the villagers, but the risk will be mitigated through awareness raising in order for them to understand the advantages of using battery swapping technologies not only for maritime transport but also for other uses such as back-up solution in the case of main grid failure or lack of supply, terrestrial transport, ice making and clean cooking.</p>
Climate risk	Low	<p>Risk: Infrastructure implemented by the project may be prone to climate change risks.</p> <p>Mitigation: the project will demonstrate the adoption of more resilient solutions and thus it is expected to have a lower climate change risk than the business as usual. All the location of the deployment of infrastructure related solutions, such as the battery swap centres, will take into account climate change risks and vulnerabilities such as the Sea level Rise and flood areas, to minimize the impact of climate change impacts/events on these structures. A climate risk assessment was conducted during the PPG stage and is contemplated in Annex J.</p>

Delay risk	Low	<p>Risk: delay in the implementation of the project activities.</p> <p>Mitigation: The project was designed so that most of the activities can be implemented independently and mostly parallel. A big part of the execution of activities to be implemented under this project will be carried out with the support of international experts/companies with demonstrated and successful experience.</p> <p>Capacity building and enabling activities will pay special attention to further defining the existing baseline in order to develop effective tailored and well-targeted training programmes and curricula.</p> <p>The status of the pilots will be regularly reviewed, and any necessary corrective steps will be promptly taken.</p>
Social and Gender Risk	Low	<p>Risk: low level of women and youth involvement in the project</p> <p>Mitigate: To mitigate this risk, the project will pursue thorough and gender-responsive communication showing the benefits of gender equality for both women and men and ensure stakeholder involvement at all levels, with special regard to involving both women and men and CSOs and NGOs promoting GEEW, and gender experts. This shall mitigate social and gender-related risks, promote gender equality, create a culture of mutual acceptance and understanding, and maximize the project's potential contribution to improving gender equality in the energy sector.</p> <p>In addition, this risk will be mitigated through specifically targeting women and youth involved in the sector for participation in consultations on needs of the village communities, policy improvements under PC1, as well as policies that will guarantee further involvement of women in the sector through the capacity building aspect of the project.</p> <p>Furthermore, in order to, ensure gender and youth inclusiveness in all project components/activities, the UNIDO methodology for gender assessment and gender responsive communication showing the benefits of gender equality for both women and men will be applied. To mainstream gender dimensions and empower women, adequate and gender responsive communication strategy will be implemented, and sensitization workshops will be organized. A full gender analysis was carried out during the PPG stage (using amongst other things the UNIDO Gender E-Mobility Tool) and its recommendations were incorporated into the project design.</p>

COVID-19 risk analysis

Risk	Risk level	Risk mitigation measure
Operational Risk ? On-going global restrictions due to global evolution of the pandemic remain	Medium/High	If travel or group gatherings and meetings are not possible due to restrictions for people traveling from/to Cabo Verde, or commuting around the country, virtual / on-line meetings will be conducted to the extent possible.

Technical expertise is not readily available due to the pandemic	Low	Necessary efforts will be made to identify alternative technical experts in case it is required (e.g., having a list of alternative experts). Planning will be flexible enough to reschedule activities onsite that require specific expertise.
Possible re-instatement of COVID-19 containment measures limits available capacity or effectiveness of project execution/ implementation	Medium	The capacity of stakeholders, and especially the beneficiaries, for remote work and online interactions will be strengthened by securing access to commercially available conferencing systems. The current design of the training/capacity building programmes is based on online interactions and deliverables, using webinars and web platforms, and therefore COVID-19 is not expected to pose a significant risk to the conduct of training. The PMU will also be continuously monitoring the national restrictions and rules in order to foresee and plan ahead of potential changes in measures.
Some project supporters, co-financiers or beneficiaries may not be able to continue with project execution/ implementation	Low	The situation will be closely monitored by the PMU and the PEE in order to find alternate supporters or co-financiers, or to readjust the list of beneficiaries if needed.
Price increases for procurement of goods/services	Medium	The project team will undertake efforts needed to find alternative providers and make sure that competitive pricing is obtained

COVID-19 opportunity analysis

Opportunity	Opportunity level	Opportunity optimization measure
New business opportunities created in response to COVID-19 related restrictions and measures	High	Response to COVID-19 restrictions, such as remote working arrangements and no-contact business modalities, will require solutions that can be turned into new business models. This is in line with pillar 4 of Cabo Verde's National Response and Recovery Plan <i>Stabilize and promote the local economy and micro, small and medium-sized enterprises, in a process of sustainable economic, social and environmental growth and job creation (including transition to formalization)?</i> . These opportunities will be analysed at the national levels and shared. Additionally, based on spurred international trade due to COVID restrictions, this project will support the uptake of domestic markets to substitute missing products from global value chains.

New business opportunities to build back better for business continuity and economic recovery post-COVID-19	High	By design, the proposed GEF/UNIDO project by adoption of electric mobility in the maritime sector through clean technology innovation will indeed contribute to with pillar 4 of Cabo Verde's National Response and Recovery Plan. The plan specifically refers to blue economy, fishing and transport sectors, as sectors that should be targeted and which the proposed project aims to target and build resilience of through the implementation of its activities.
---	------	--

Climate Change Risk

The ESMP and Section 1.1.2 above identify the climate change trends, impacts of climate changes, climate future and expected risks for Cabo Verde. As an island country, Cabo Verde expects a reduction of coastlines due to a possible sea level rise that can likely be a significant constraint to development and will dramatically affect coastal areas and the population (since 80% of the population live in coastal areas), tourism, loss of habitat, biodiversity and fisheries. In Cabo Verde, the main effects of sea level rise are increased coastal erosion, partial flooding depending on the tides, increased salinity in wells and boreholes located in the lowlands of the rivers, displacement of people to inner parts of the islands, abandonment of some tourist facilities located in areas affected by tides.^[1] Landslide susceptibility is also classified as high for the country. This means that this area has rainfall patterns, terrain slope, geology, soil, land cover and (potentially) earthquakes that make localized landslides a frequent hazard phenomenon.

Based on the analysis carried out, the impact of coastal flood and landslide was considered in the design of the relevant project activities ? pilot projects ? since they will be located near the coast. Project detailed design, and construction methods will take them into account (PC2).

The activities related to trainings targeting governmental stakeholders and decision makers will include climate risks and corresponding mitigation measures for Cabo Verde. With this, the project will enhance the awareness of fisheries on the increased frequency and severity of climate hazards and the vulnerability of this sector due to its dependence on natural assets (marine biodiversity).

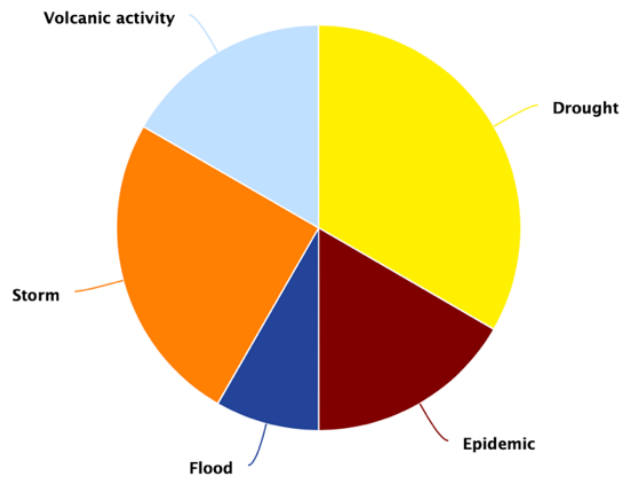


Figure 12: Average Annual natural hazard occurrence for 1980-2020[2]

[1] <https://climateknowledgeportal.worldbank.org/country/cape-verde/vulnerability>

[2] <https://climateknowledgeportal.worldbank.org/country/cape-verde/vulnerability>

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.

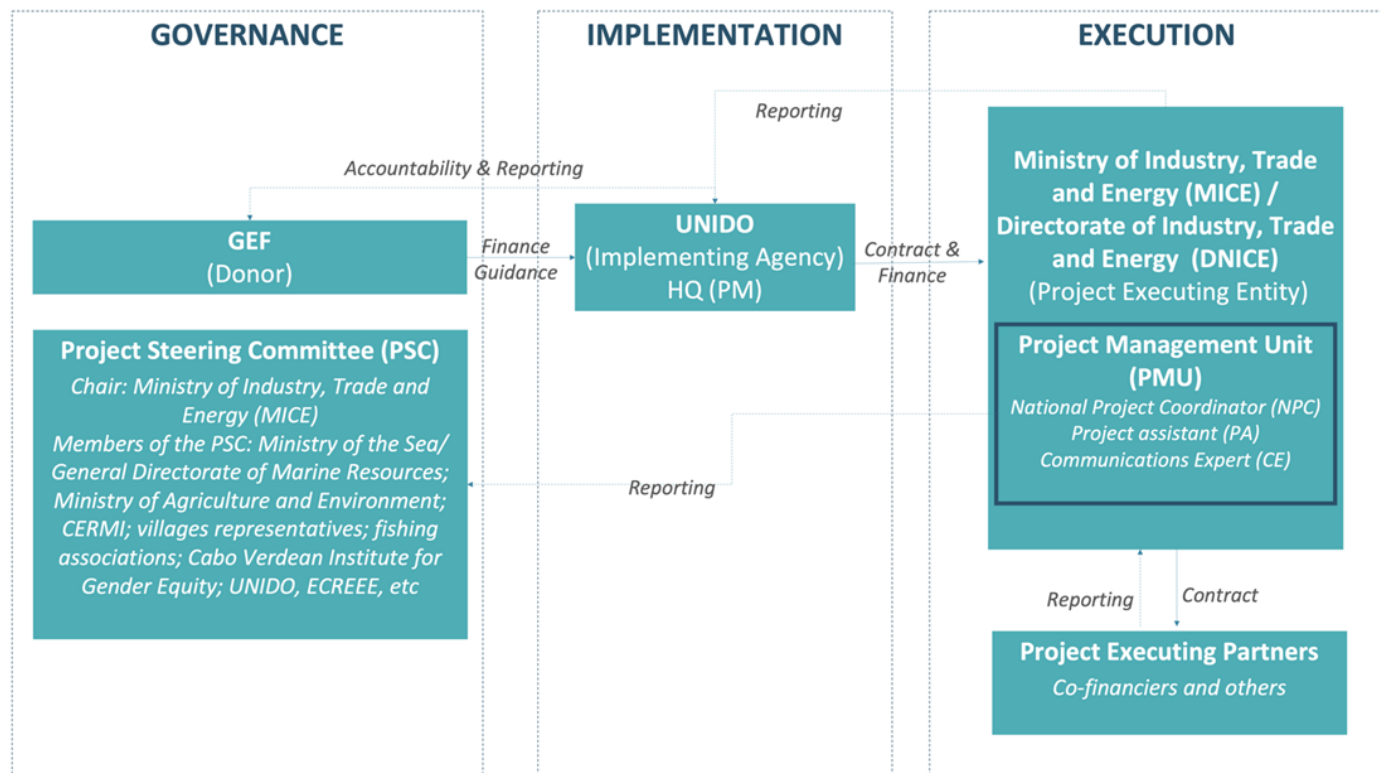


Figure 13: Implementation Arrangement Schematic

The proposed project will be implemented by UNIDO as Project Implementing Agency (GEF Agency), which entails oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and requirements. UNIDO as the GEF Agency will also be accountable to the GEF Council for the GEF-financed activities, as well as it will be responsible for project cycle management services and corporate activities, including all enquiries regarding the project implementation progress, project-level reporting, mid-term review, terminal evaluation and the achievement of the project's impacts on the global environment. In addition, upon request of the Government, UNIDO will provide limited support for the execution of the project, by providing support to the PMU within the MICE/DNICE in: (i) preparation of procurement and recruitment plans; (ii) terms of reference and procurement packages; (iii) management of output deliverables and technical assistance services in the design of battery swapping systems and e-mobility solutions.

The Project Executing Entity (PEE) for this project will be Ministry of Industry, Trade and Energy (Portuguese acronym, MICE) through the Directorate of Industry, Trade and Energy (Portuguese acronym DNICE). UNIDO will be issuing an implementing partner agreement to MICE/DNICE for the overall project execution. The PEE will be responsible for the overall project execution and for the execution of PC1, PC2, PC3 and part of PC4, including the management and disbursement of the funds associated with these project components. MICE/DNICE underwent a HACT assessment to verify its suitability as the executing agency for the project.

The DNICE is responsible for the design, execution and evaluation of energy policy (including electric mobility), as well as the presentation of proposals aimed at growth, improvement and increased productivity and competitiveness in the sector. It is also responsible for ensuring the implementation of the industry, trade and energy development strategy, as well as encourage the creation of energy, industrial and commercial infrastructure.

The DNICE will contract other Project Executing Partners (PEPs) to support the implementation of different project activities. Some of the PEPs have already been identified during the PPG (e.g., S?o Vicente Municipality, Porto Novo Municipality, University of Cabo Verde, UTA, EMAR and ENAPOR) but others will be contracted during the implementation of the project. For that, an open and competitive process will be applied to select the service providers, following national legislation and rules as well as GEF and UNIDO rules, as applicable.

The PMU will be created and will sit at the DNICE. The PMU will include a National Project Coordinator (NPC), Project Assistant (PA), and Communications Expert (CE); and they will be responsible for the day-to-day management of the project activities under PC1, PC2, PC3 and PC4, including implementation of the M&E plan and follow-up with PEPs. Additional tasks of the PMU include: development of annual workplans, support the execution of the draft of the Project Implementation Reports (PIR), execution of project activities, ensuring coordination and collaboration with other projects; and ensuring public relations and communication of project results, lessons learned and success stories. The PMU will be the main point of contact with UNIDO and will take care of reporting to UNIDO. The PMU will be responsible for overall coordination of the reporting on the project's status to the PSC, as well as M&E of project activities, as to be specified in the project workplan.

A Project Steering Committee (PSC) will be formed at project start to ensure project oversight, coherence and institutional ownership of the project, as well as to provide advisory inputs in key topics attaining the project. The PSC will be chaired by the MICE. Representatives from institutions involved in the different project components as well as government representatives of key sectors and financial institutions will be members of the PSC. Also, UNIDO will be a member of the PSC. The complete list of stakeholders in the PSC will be identified at the beginning of the implementation period. A priori, a set of institutions (in addition to the MICE and UNIDO) have been identified as potential members of the PSC, namely:

Chair: MICE/DNICE (Chair)

Ministry of the Sea / General Directorate of Marine Resources

Ministry of Agriculture and Environment

CERMI

Cabo Verdean Institute of Gender Equity

Representatives of villages and fishing associations

ECREEE

UNIDO

The PSC will approve the annual work plans and budgets, as well as the annual progress reports. The PSC will act as an advisory mechanism to ensure the successful design and implementation of the project through providing operational guidance as well as overall, high-level coordination. Any changes/amendments proposed to the project and/or to the workplans and budgets by the PSC are done in accordance with the approved project document, the GEF policy, and UNIDO rules and regulations. Minutes of meetings are signed by UNIDO and the PSC Chairperson(s). The primary roles of the PSC are: (1) to provide overall guidance to the execution of the project; (2) to ensure good coordination among participating agencies and other organizations; and (3) to approve any substantial change or addition of new project outputs in response to the emerging issues.

Coordination with other GEF-financed projects and initiatives

This project will be conducted in coordination with ongoing GEF projects in Cabo Verde, as well as other projects and initiatives identified above in the Baseline Scenario (see Table 1) as to build upon lessons learned, increase synergies, and avoid duplication of efforts.

There are a number of planned activities and GEF-financed projects in Cabo Verde that present potential for synergies and collaboration with the proposed GEF/UNIDO project. A brief summary on synergies with GEF project is provided in the following table.

Table 8: Coordination with GEF Projects

Project title	Time- frame	Financiers	Coordination Mechanisms
Sustainable energy access to manage water resources: Addressing the Energy-Water Nexus	2017- 2023	GEF through UNIDO	The proposed GEF/UNIDO project continue to engage with several of the key stakeholders of the GEF6 Energy-Water Nexus project. Lessons learnt from the implementation of the GEF6 Energy-Water Nexus were included on the proposed project design.
Supporting Sustainable Inclusive Blue Economy Transformation in AIO SIDS[1]	Project Concept approved in Nov 2021.	GEF through UNDP	This UNDP Project aims to support the development and realization of sustainable blue economies in Atlantic and Indian Ocean SIDS through improved governance, national Blue Economy demonstrations, and knowledge management. Links will be established with this project regarding the development of the e-mobility roadmap in PC1 and regarding the pilot projects in PC2 and PC3, as the pilots can also be used as Blue Economy demonstration pilots.

<p>GEF Small Grants Programme (SGP)^[2] 7th Operational Phase & 6th Operational Phase</p>	<p>7th Operational Phase: 2022 - 2026 6th Operational Phase: 2017 - 2022</p>	<p>GEF through UNDP</p>	<p>The GEF SGP being implemented in CV, has been supporting from 2021 an electric fishing vessel project promoted by the Salamansa Fishing Association, based in S?o Vicente, Cabo Verde. Lessons learnt from the Salamansa Fishing Association project collected at PPG stage were taken into account in designing the proposed project. Synergies will be created between the two projects, to avowing introducing different technologies into CV, if the one adopted by the SGP project sulfides for the proposed uses, as well as to build on the experience and lessons learnt so far in terms of small scale e-mobility solutions for the maritime sector. In addition, members of the Salamansa Fishing Association will be invited to project meetings at the inception phase of the proposed project as well as throughout the project when that makes sense.</p> <p>The lessons learnt from the Salamansa Fishing Association project collected at PPG stage include: (1) the electric propulsion system, despite being a rapidly developing technology for maritime activities in several countries, in Cape Verde is a novelty, particularly for the fisheries sector. Thus awareness raising and capacity building on the technologies are crucial to effectiveness and efficiency in the sector and sustainability. In this regard, capacity building materials will take into account Salamansa experience, data and strategy; (2) it is necessary to research markets and identify efficient and suitable solutions for fisheries; (3) support the mobilization of financial resources in the framework of national and international cooperation is required through the demonstration of further success cases.</p>
<p>CFI: Coastal Fisheries Initiate (Program)^[3]</p>	<p>Programme under implementation</p>	<p>GEF funding. Being implemented by CI, UNDP, UNEP, WB, WWF</p>	<p>The proposed GEF/UNIDO project will look into creating synergies with the Cabo Verde activities of CFI, as well as it its two (2) child projects targeting cabo verde:</p> <p>? Delivering sustainable environmental, social and economic benefits in West Africa through good governance, correct incentives and innovation (being implemented by FAO/UNEP)</p> <p>? Coastal Fisheries Initiative (CFI)? Challenge Fund (World Bank)</p> <p>The executing agencies of these projects will be engaged in consultation activities to be promoted by the proposed project, making sure that synergies are created.</p>

Managing multiple sector threats on marine ecosystems to achieve sustainable blue growth^[4] (UNDP) National Project	2020 - 2024	GEF through UNDP	The proposed GEF/UNIDO project will see how it can build on information generated by this UNDP project and see how it can contribute to it, specially to PC3 of that project that looks into sustainable fisheries management, in which e-mobility solutions can have a role. UNDP was engaged during the PPG and will continue to be engaged through the implementation of the project, ensuring in this way that synergies are created.
--	-------------	------------------	---

Transfer of Assets

Full or partial ownership of equipment/assets purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the government counterpart in consultation with the UNIDO Project Manager.

Legal Context

The Government of the Republic of Cabo Verde agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed on 31 January 1976 and entered into force on 14 January 1978.

[1] <https://www.thegef.org/projects-operations/projects/10865>

[2] <https://www.thegef.org/projects-operations/projects/9774>, <https://www.thegef.org/projects-operations/projects/10655>

[3] <https://www.thegef.org/what-we-do/topics/coastal-fisheries-initiative>

[4] <https://www.thegef.org/projects-operations/projects/9705>

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The proposed GEF/UNIDO project is fully consistent with all the relevant national strategies and policy documents outlined in the description of the baseline scenario as well as with related assessments carried out in the sectors of relevance.

Table 9: Consistency of the project with national strategies and plans

Policies, Plans, Programs and Legislation	Consistency of the project with national document
National Renewable Energy Action Plan (NREAP, 2015), the National Energy Efficiency Action Plan (NEEAP, 2015), and the SEforALL Action Agenda (SEFORALL AA)	Documents endorsed by Resolution 100/2015, providing guidance on the country path towards 2030 regarding Energy Access, renewable energy and energy efficiency. These plans set up goals and targets for RE and EE and the respective measures to achieve those targets. The proposed project will contribute to the implementation of these targets as the batteries used for the different transportation modes will be charged through renewable energy sources (PV) and can be used either for transport or supplying electricity to households that lack access to it.
Law n° 102/VIII/2016 Code of Fiscal Benefits <i>(Modifies Law n° 26/VIII/2013)</i> Legislation	Creates fiscal incentives for the use of RE technology. Establishes principles and rules applicable to tax benefits for investment (Investment Tax Credit by deduction of Corporate Income Tax (CIT) collection in an amount equal to 50% for RE production and manufacture and installation of RE equipment) and exemption from custom duties to registered industrial companies on materials incorporated in the production of goods or services intended for RE generation. The proposed GEF/UNIDO project will try to make use of these fiscal incentives and exemption regarding the implementation of the demonstration projects.
Sectorial Strategic Plan for RE (SSPRE) Plan	Approved by the Resolution of the Council of Ministers n° 7/2012, lays the plan for renewable energy based on studies showing the available renewable energy sources in the country and identified the "Renewable Energy Development Zones" (REDZ). The installation of RE equipment in REDZ does not require the completion of the ESIA process for licensing. The proposed GEF/UNIDO project will try to make use of these in case the pilot projects are located a REDZ zone.
National Electricity Sector Master Plan 2018-2040 (Resolution N. 39/2019= Plan	Provides Forecasts of energy growth and outlines key strategies for the execution of on/grid energy related policies and targets between 2017/2040. To be analysed and adjusted every 5 years. The project will contribute to the implementation of this plan by providing decentralised electricity solutions to household/business that are remote and to which the connection to the grid is not foreseen in the near future.
Strategic Sustainable Development Plan (PEDS) 2022-2026 Plan	It constitutes the main vehicle for Cabo Verde to fulfil the sustainable development agenda, Municipal Strategic Sustainable Development Plans (PEMDS), are an example of participation within the framework platforms of local multi-stakeholder platforms and promotion of the SDGs. The project will contribute to the implementation of the PEDS in the locations where the demonstration projects are installed.

National Program for Sustainable Energy (PNSE) Program	<p>The long-term goal is to transition to an efficient, safe and sustainable energy sector, thus reducing reliance on fossil fuels and ensuring universal access and energy security. Five (5) axes of interventions are identified as crucial to the success of the PNSE, among them the development of renewable energy and the promotion of efficiency.</p> <p>The proposed GEF/UNIDO project is aligned with the objective of this programme. Synergies will be explored during project implementation as the proposed GEF/UNIDO project may contribute to the implementation of this programme.</p>
Article 9 of Decree-Law No. 56/2015 of October 17th Legislation	<p>Establishes the general rule applicable to the prevention, production and management of waste. It states that the entity responsible for "<i>the act of introduction of the vehicle in the national territory</i>" is responsible for managing the vehicle at its end-of-life.</p> <p>The project will follow this law, especially concerning the pilot project infrastructure to be implemented and its maintenance. Reduce waste production and good waste management practices are expected to be put in place during project implementation and kept after project closure.</p>
Electric Mobility Policy Charter (CPME) Charter	<p>It is framed as an instrument to establish the country's strategic vision in this matter and to communicate the main measures that will guide the creation of the necessary conditions for the initial phase, followed by the long term massification of electric vehicles (EV) in the country, assuring the adequate development of necessary infrastructures, regulatory framework, and services offerings that allow any citizen or organization to have access to electric mobility solutions.</p>
Resolution No. 13/2019 on the February 1st 2019 Charter	<p>This project targets the implementation of e-mobility solutions at a smaller scale ? artisanal fishing vessels, bikes etc ? and the necessary supporting infrastructure, contributing to the implementation of this charter</p>
Cabo Verde E-Mobility Action Plan 2019-2035 (PAME) Plan	<p>Has the objective of identifying the actions to be developed in the short, medium and long term for the materialization of the objectives established in the mobility charter letter, grouped according to three axes of intervention.</p> <p>The proposed GEF/UNIDO projects is fully aligned with this action plan and will contribute to its implementation through the introduction of e-mobility solutions in the transport sector of Cabo Verde.</p>
Decree-law n° 46/2021 Legislation	<p>Establishes the principles and rules for the exercise of the activities of Energy Service Companies (ESCOs).</p>
Technology Needs Assessment (TNA) Cabo Verde Report Cabo Verde 2020 Update to the first Nationally Determined Contribution (NDC) Plan	<p>The Cabo Verde 2020 Update to the first Nationally Determined Contribution identified the country's NDC contribution to 2030, including increase in renewable energy uptake, and long-term decarbonisation vision (2050). It identified 14 specific contributions until 2030 (5 for Mitigation and 9 for Adaptation), which will translate into a reduction in the country's emissions by at least 20%, that is, from 200,000 to 280,000 tCO₂eq, annually. For the implementation of these contributions, more than one hundred measures are identified, whose lasting impact of adaptation will also be felt in food security, water security, energy security and the resilience of the economic and social sectors. More than half of the electricity is expected to come from local renewable sources, mobility will be low carbon, through the promotion of electric vehicles, especially in public transport, most of the seawater desalination facilities will start to work with wind and solar energy.</p> <p>The proposed GEF/UNIDO project it is aligned with the Technology Needs Assessment of Cabo Verde and Cabo Verde NDC (2020), which includes both mitigation and adaptation actions/measures to be rolled out in the country through the implementation of e-mobility, renewable energy and energy storage solutions. The project will contribute towards the achievement of the 2030 NDC country goals.</p>

Blue Economy Charter	<p>The Blue Economy Charter promotes the country's sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism. The charter is accompanied by the National Investment Plan for the Blue Economy and a Program for the Development of a Blue Economy in Cabo Verde. These instruments indicate that the country intends to reinforce the coherence and integration of public policies related to its maritime economy and the coordination for an integrated approach with other sectors such as transport, renewable energy, industry, tourism, trade, environment, agriculture, fishing and aquaculture, among other areas of social and human development. National Investment Plan for the Blue Economy and the Promotion programme are based on 3 pillars: (i) Investments (ii) Projects aimed at adapting existing elements (iii) New specific investments for the Blue Economy.</p> <p>The proposed project aims to contribute to the implementation of the blue economy charter and national investment plan by providing and piloting more resilient transport solutions that can be used in different activities contemplated under the blue economy.</p>
National Investment Plan for the Blue Economy	
Blue Economy Promotion Program	
Cabo Verde Ambition 2030: Declaration of Commitment for Sustainable Development	<p>Validates i) The guidelines of the Strategic Agenda for Sustainable Development of Cabo Verde and, based on the ambition that in 2030 Cabo Verde will be a consolidated and modern democracy, inclusive, a blue nation, digitalized, emerging and resilient, a circulation economy located in the Middle Atlantic integrated in ECOWAS with full employment and shared prosperity, a country useful to the world and a reference of pride for all and ii) The proposal of commitments for the Sustainable Development of Cabo Verde.</p> <p>The proposed project is aligned with the countries ambition, and aims to support on its delivery.</p>
Sustainable Development Strategic Plan (PEDS II: 2022 - 2026)	<p>It operationalizes the Government Program of the X^o legislature and the Strategic Agenda for Sustainable Development Cabo Verde 2030 and above all it should drive changes and accelerate progress to fulfil the 1st cycle of Ambition 2030.</p>
Cabo Verde National Adaptation Programme of Action 2007-2012 (NAPA, 2007)[1] Program National Adaptation Plan[2] Plan	<p>The Cabo Verde National Adaptation Programme of Action 2007-2012 aims to increase the capacity of Cabo Verde resilience to climate change and climate variability in order to achieve the development objectives set in its Growth and Poverty Reduction Strategy Paper, through amongst other things, the promotion of integrated water resources management in order to guarantee water for the people, for the production of food, for the ecosystems and for the tourism industry.</p> <p>Recently the Cabo Verde's National Climate Change Adaptation Plan 2022-2030 (NAP CV) was developed, which lays the path for the country to minimize the impacts of climate change through planned and concerted actions at all levels and become a safe small island state, with all the necessary capacities to take advantage of the opportunities provided by climate change to become more sustainable, innovative and resilient.</p> <p>The proposed project is aligned with this plan and aims to test solutions that will enable the country to reduce its GHG emissions and that are more resilient, and thus, contributing to adapt to climate change effects/hazards.</p>

United Nations Framework Convention on Climate Change (UNFCCC) Third National Communication to the UNFCCC (2018) Convention National Capacity Self-Assessment Report	<p>Cabo Verde 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 Third National Communication to the UNFCCC (2018)[3]. 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.</p>
Minamata Convention on Mercury Minamata Initial Assessment Report[4] (2018)	<p>The Minamata Convention on Hg became one of the first worldwide environmental agreements in the 21st century. It was adopted in 2013, and to date, 123 countries have signed the agreement. The convention aims <i>to protect human health and the environment from anthropogenic emissions and releases of Hg and the compounds and it sets out a range of measures to meet the objective?</i>. Recently Cabo Verde carried out its initial Minamata Assessment report as a clear signal for its commitment to ratify the Minamata Convention. According to the results of the initial report the biggest source of release of mercury to the environment is mainly through the use and disposal of products, waste deposition, waste incineration and open waste burning and informal waste dumping.</p> <p>The proposed project will obey to the convention specially regarding equipment / waste that may include mercury that should be handled and disposed appropriately.</p>
National Biodiversity Strategy and Action Plan 2014-2030[5] Strategy & Plan	<p>The national vision for biodiversity conservation for the next 15 years is based around three basic principles: i) effective conservation and integration of the values of biodiversity; ii) involvement and participation of society as a whole in the conservation and sustainable use of Biodiversity; iii) and fair and equitable sharing of benefits that will ensure the country's development and welfare of the population.</p> <p>This project is aligned with this strategy and action plan and aims to contribute to it through the deployment of more environmentally friendly modes of transportation and energy generation/provision, substituting fossil fuelled based ones that have important environmental impacts associated to it.</p>
Cabo Verde National Implementation Plan under the Stockholm Convention on Persistent Organic Pollutants (PoPs)	<p>The Convention commits the signatory countries to take action to eliminate or reduce the production, use, export and import of POPs, to prevent the unintentional emission of these POPs into the environment, and to provide adequate disposal of their wastes and stocks.</p> <p>The project is in line with this plan.</p>
Decree-Law No. 27/2020 approving the Legal Framework for Environmental Impact Assessment (EIA)[6] Law	<p>Approves the Legal Framework for Environmental Impact Assessment (EIA). This Legal Framework regulates the Environmental Impact Assessment of public and private projects likely to have significant effects on the environment. It regulates stakeholders and their related competences, the phases of the environmental impact assessment, the registration of consultants and the constitution of technical teams, as well as the fees.</p> <p>The project will follow the EIA legislation.</p>

[1] Cabo Verde National Adaptation Programme of Action 2007-2012 (NAPA, 2007) extracted at: <http://unfccc.int/resource/docs/napa/cpv01.pdf> GEF6 CEO Endorsement /Approval Template-August2016

[2] https://unfccc.int/sites/default/files/resource/NAP_Cabo%20Verde_EN.pdf

[3] https://unfccc.int/sites/default/files/resource/0136895_Cabo%20Verde-NC3-1-Cabo%20Verde%20-%20Third%20National%20Communication%20on%20Climate%20Change.pdf

[4] https://www.mercuryconvention.org/sites/default/files/documents/minamata_initial_assessment/Cabo-Verde-MIA-2018.pdf

[5] <https://www.cbd.int/doc/world/cv/cv-nbsap-v2-en.pdf>

[6] <http://faolex.fao.org/docs/pdf/cvi194850.pdf>

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Following the IEO (2020)[1] knowledge is an important resource of GEF that supports its strategic objectives to address global environmental concerns. The purpose of Knowledge Management (KM) is to streamline and improve the impact of UNIDO/GEF funded project in Cabo Verde and inform global, regional and national policy dialogues to reverse environmental problems through innovative low carbon maritime mobility solutions. Further on the knowledge-sharing and learning across the UNIDO partnership should be strengthened, particularly through the enhanced support for deepening the local benefits. At country level the KM consider applications to assist national policy to review specific legal and technical direction through new gains in order to consolidate achieved products and learn from other projects as a baseline for future investments.

Although the proposed GEF/UNIDO project does not have a specific KM project component it has several outputs and activities that aim at generating and sharing knowledge and learnings. Through these the project will explore the ways to create, manage and disseminate knowledge on low carbon maritime mobility solutions and environmental related issues in the project focus area and nationwide. The following table provides the budget for the KM activities of the project.

Table 10: Budget for KM activities

KM Activities	US\$
Training / Workshops / Meetings	40,000.00
Project Website	30,000.00
Project Communication Strategy & Plan and Knowledge Management System & Plan (Output 4.1.1.)	10,000.00
Information & Awareness Campaign	14,000.00
TOTAL	94,000.00

At the project start, the PMU will establish the **Project's Communication Strategy & Plan and the KM System & Plan** (Output 4.1.1), to guide KM activities/materials and communications. All information and knowledge generated by the project will follow the project's communication guidelines and p ?brand? and will be made available **through the project's website created as part of PC3 as well as other means identified in the Project's Communication Strategy & Plan and the KM System & Plan.**

In more details:

- ? Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums such as those used by the NAMA Facility funded project on Promotion of E-mobility in Cabo Verde.
- ? The project will identify and participate, as relevant and appropriate, in meetings and conferences which may be of benefit to project implementation through lessons learned. The project will identify, analyse and share lessons learned that may be beneficial in the design and implementation of similar future projects.
- ? The project will incorporate the lessons learned from similar relevant projects in Cabo Verde into the media coverage and marketing campaigns with the UN in Cabo Verde.
- ? Different tools such as creation of project website to share its activities, expected impact and the role of the civil society and private sector. Collaboration with other entities through their information exchange platform can be an added channel. Promotion through social media channels, UNIDO portal and participating in exhibitions that in addition to other tools that will be generated on later stage shall be efficient as support to knowledge management. To easily share knowledge and lessons learned within and beyond the project intervention zone, UNIDO's Open Data Platform will be used to collect relevant reports and data on technology investments projects.
- ? A group of activities are considered in the project components for learning and knowledge sharing, including publications, SMTU meetings, workshops, trainings, awareness raising, pilot projects, case studies etc.

All knowledge management activities (such as workshops, trainings, awareness raising) will be gender and youth responsive. Women and youth will be encouraged to lead and participate in these events. Gender and youth dimensions will be integrated into project documents (incl. action plans), publications, for instance presenting sex and age-disaggregated data, gender sensitive language in publications, photos showing both women and men, and avoid presenting stereotypes, as well as assuring that women, men and the youth have access to and benefit from the knowledge created.

Continuous monitoring will be conducted throughout the project life-time. Up-to-date reports will be shared with the main stakeholders.

Not only Cabo Verde will have a pioneering role in maritime e-mobility and other technologies showcased by the project for other SIDS and ECOWAS member countries but also will benefit from the knowledge learned by UNIDO through other projects and the Global Programme to Support Countries with the Shift

to Electric Mobility. As a GEF Implementing Agency, UNIDO has a growing global experience (e.g., China, Philippines, Thailand, Nepal, Jordan, Albania, Tunisia, South Africa, Malaysia) in the implementation of e-mobility projects and the knowledge and network to be leveraged by the proposed project will consolidate knowledge of the sector within and across UNIDO projects and for global level initiatives. This approach will enable and facilitate knowledge sharing between stakeholders involved in maritime e-mobility to provide an ongoing coordination mechanism that will remain in place beyond the project period.

Moreover, the proposed project can benefit from all knowledge products which will be made publicly and freely accessible through a joint GEF 7 / EC SOLUTIONS plus e-mobility on-line toolbox (or in some exceptional cases through the partners dedicated GEF 7 Global Electric Mobility Programme webpages).

The following table provides a general overview of the main deliverables relevant for knowledge management.

Table 11: Overview of deliverables related with knowledge Management

Deliverables	Timeline
Project Communication Strategy & Plan and Knowledge Management System & Plan (Output 4.1.1.)	By the 6th month of project implementation/execution with regular updates each year
Materials produced during the implementation of the project: including policy briefs, impact reports, brochures, webinars and other types of promotional and training materials distributed through briefing sessions, press releases, social media presence, advertising, pilot projects case studies, assessment of the result of the project highlighting successes and challenges with the implementation of a battery swap business models, etc.	From the 6th month of project implementation/execution and according to the timeline as to be specified in the KM System & Plan and in the PRF.
The projects Website created and operationalized	By the 6th month of project implementation/execution
Meetings of the PSC and SMTU will be used to share information and materials produced within the project with the different stakeholders that participate in these meetings	By the 6th month of project implementation/execution
National and international events and conferences	Annually / bi-annually

[1] [IEO \(2020\): Evaluation of Knowledge Management in the GEF. Independent Evaluation Office of GEF, report, p.43](#)

9. Monitoring and Evaluation

Describe the budgeted M and E plan

The monitoring and evaluation (M&E) will be conducted in accordance with established UNIDO and GEF procedures. The overall objective of the M&E is to ensure successful and quality implementation of the project by: i) tracking and reviewing project activities execution and actual accomplishments against targets; 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; and iii) adjusting and updating project strategy and implementation plans to reflect possible changes on the ground, results achieved and corrective actions taken.

According to the M&E policy of the GEF and UNIDO, 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.

The Project Result Framework (Annex A) provides performance and impact indicators for project implementation/execution along with their corresponding means of verification (plus baseline and targets). The actual progress will be reported against the workplan approved by the PSC. In case there are significant deviations between the forecasted workplan and actual implementation, corrective measures will need to be taken.

The M&E Plan (developed as part of PC4) will include time-bound milestones and deliverables. The PMU will also draft progress review reports every six months and will update the PSC before each meeting.

There will be an external mid-term review (MTR) of the project conducted halfway through project implementation, and a terminal evaluation to be started three months before project expected finalisation date (implemented as part of PC4).

The environmental and social consideration, gender and youth dimensions and baseline for gender related targets will be appropriately captured in the project's M&E plan, in the progress review reports, as well as in the collection and assessment of relevant data. The M&E plan will encompass monitoring of the Environmental and Social Management Plan, the Stakeholder Engagement Plan, the Gender Analysis Report, and a Risk Analysis. Detailed gender mainstreaming strategy and action plan focusing on the project sector and activities will be included into the M&E framework based on a in-depth gender analysis that will be conducted during project inception.

The methodology for impact assessment of the project should be drafted as part of the M&E framework in PC4, to inform the estimation, tracking, and reporting activities of the project regarding impact. The methodology will enable assessment of social, economic, and environmental impacts, and at a minimum, it will account for global environmental mitigation benefits (GHG emission reduction), job creation, gender mainstreaming, and investment leveraged. Monitoring and Evaluation of direct and indirect GHG emission reductions will make use of the GEF Tracking Tool. Whenever possible, the data will be sex-disaggregated and gender-sensitive, and youth participation will also be recorded.

An overview of indicative costs of M&E activities is provided in Table 11 below.

Table 12: M&E Activities

M&E activity	Timeframe	GEF Budget (USD)	UNIDO in-kind co-financing (USD)	PEE in-kind co-financing (USD)	Responsible parties
M&E Framework and Plan	First 3 months after implementation start date	8,000	10,000	10,000	PEE
Periodic progress reports	Every 6 months	13,000	20,000	20,000	PEE
Project Implementation Review (PIR) reports	Every fiscal year the project is under implementation, to be submitted to GEF by 15 September each year.	0	10,000	10,000	PEE to provide feedback and UNIDO to finalize and submit the GEF
Mid-term review	At 3 years after implementation start date	20,000	0	0	External evaluator, submission to UNIDO
Terminal Evaluation	Start 3 months prior to estimated project end date	25,000	0	0	External evaluator, submission to UNIDO
Total		66,000	40,000	40,000	

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCE/SCCF)?

The proposed GEF/UNIDO project aims to promote awareness of the new e-mobility, vehicle sharing and low-voltage electricity supply solutions, so that these solutions feature in Cabo Verde's energy and mobility future. This will help address climate change issues by demonstrating technology solutions that are more resilient and environmentally friendly at the same time that it is contributing to reduce GHG emissions through the implementation of the pilot projects.

Through the implementation of the pilot projects, the project is estimated to reduce 15,482 in direct GHG emission reductions and 154,820 in indirect emissions reductions, totalising 170,302 CO₂eq of emission reductions during the lifetime of the proposed infrastructure for the pilots (10 years).

Considering the potential for change in these sectors, including the GHG reductions related to 'last-mile' electricity supply (using swappable batteries replacing small fossil-fuelled generation), the use of small-format electric vehicles to displace the use of larger fossil-fuelled vehicles (including gains from the greater uptake of public transport that will accompany better options for first- and last-mile travel), the use of electric outboards displacing the use of gasoline-fuelled outboards and marine electrification extending to other vessels, and many others, the proposed project has the potential to seed an annual decrease in GHG emissions of to the order of around 10,000 tonnes CO₂e per year. This estimate is based upon the following:

- ? Displacing around 10% of the fossil fuel used by the land-transport sector through a shift to low-voltage, small-format electric vehicles.
- ? Powering around 50% of the artisanal fishing fleet with electric propulsion systems (which results in a minor change in comparison to that expected to be achieved through a shift in mobility modes to small-format electric vehicles).
- ? Base data for GHG emissions from land transport: 230,000 Ton of Equivalent Petroleum (tep) total fuel consumption for Cabo Verde[1], transport making up 28% of Cabo Verde internal fuel consumption[2] and the GEF emissions factor of 2.7 kg CO₂e/liter for petrol.

It is estimated that the project will be benefiting directly and immediately 2,000 people, comprising the inhabitants of the two target villages in which the pilot projects are to be deployed and the stakeholders directly benefiting from training and other capacity building activities. Having into account the 'Cabo Verde Village 2040' vision, the proposed project has the potential to influence the future make-up of every village in Cabo Verde, plus a proportion of those living in the urban environment. Currently over 30% of Cabo Verde's population lives in villages[3], which is around 160,000 persons. Suppose battery swap mobility were to be used by 10% of the urban population within 20 years' time, a further 56,000 persons (based on current population data) would stand to gain. Together, there is the potential for the project to influence the energy and mobility habits of around 215,000 persons (split relatively evenly between women and men).

Additionally, the project will adopt an electric battery set that can be adapted to be used in both maritime and terrestrial transports as well as be used by the population to face their energy needs. This will be particularly important for remote population in the island that don't have access to the existing grid or existent mini-grids at the same time, that will contribute to reduce waste, as the same batteries can have the double of the function, reducing waste typologies to be managed.

There are also many other benefits to be realised from establishing the new technology solutions, including improved access to more affordable electricity and mobility, improved local air, ground and water quality, improved robustness and dependability, greater resilience, and improved quality of life. The fact that the battery set is supplied through renewable energy (PV) and can be used for several purposes, makes the villages and its population more resilient to climate change hazards and events. These have the potential to make village life more attractive and may be an enabler to slow the movement of population from villages to urban settings.

[1] Ministry of Industry, Trade and Energy (2019)

[2] Ministry of Industry, Trade and Energy (2019)

[3] Derived from World Bank data:

<https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=CV>

11. Environmental and Social Safeguard (ESS) Risks

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

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate	Medium/Moderate		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

As per UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), the Environmental and Social screening template has been completed and the project has been categorized as B. Hence, an Environmental and Social Management Plan (ESMP) was developed during the PPG phase. The ESMP document attached.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
Environmental and Social Management Plan	CEO Endorsement t ESS	
E&S_Screening_Template_SAP_ID_200308_Cape_Verde_E -Mobility	Project PIF ESS	

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).

Project Strategy	KPIs/Indicator	Baseline	Target	Means of Verification	Assumptions
Objective: To advance the adoption of electric mobility in the maritime sector particularly for remote villages integrated with the use of renewable energy (RE) options.	# beneficiaries reached by the project (sex and age-disaggregated)(GEF Core Indicator #11)	None	Number: at least 2,000 beneficiaries Women participation target: 40% Youth participation target: 30%	Project M&E System Project Annual Reports GEF GHG Emissions Calculation Tool Electric Mobility Online Platform and other Project's communication materials developed	There is continuous support for and participation in low-carbon e-mobility solutions National government continue to low carbon energy and e-mobility solutions Financial and human resources can be channelled towards promoting of low-carbon e-mobility solutions
	US\$ investment leveraged for e-mobility technologies	None	At least US\$ 4 million is raised in co-finance supporting low-carbon e-mobility maritime transport solutions		
	# of direct and indirect GHG emissions mitigated (metric tons of CO ₂ e) (GEF Core Indicator #6)	None	Direct emissions: At least 15,482 tCO ₂ e Indirect emissions: At least 154,820 tCO ₂ e (Over the 10 years of the project lifetime)		
	# of jobs created through the establishment of the SMTU and the pilot projects (disaggregated by sex and age)	None	Number: at least 6 % women: 50% % of youth: 30%		
PC1: Policy and institutional support to promote low-carbon maritime mobility solutions					
Outcome 1.1: Capacity building and support for creation and implementation of low-carbon energy and sustainable maritime transport policy is provided					

Output 1.1.1: Sustainable Maritime Transport Unit (SMTU) is established	New Sustainable Maritime Transport Unit (SMTU) established (Yes/No)	None	New Sustainable Maritime Transport Unit (SMTU) established: Yes/No	SMTU ToRs / establishment documents Electric Mobility Online Platform and other Project's communication materials developed Project M&E System records Package of training materials available Relevant reports developed after workshop(s) take place Project Annual Reports	National government continue to low carbon energy and e-mobility solutions SMTU is formed SMTU members willing to participate in project activities Continuous support from business partners, NGOs and other relevant actors for e-mobility development in Cabo Verde
	# of jobs created through the establishment of the SMTU (disaggregated by sex and age)	None	Number: at least 2 % women: 50% % of youth: 30%		
	# of meetings of the SMTU % of women participation in the SMTU meeting % of youth participation in the SMTU meetings	None	Number: 8 % of women participation in SMTU meetings: 50% % of youth participation in the SMTU meetings: 30%		
	% of SMTU members attending the training session on low carbon energy and sustainable transport solutions for SMTU members (sex and age disaggregated)	None	80% of SMTU members attend the workshop on low carbon energy and sustainable transport solutions for SMTU members (with 50% women and 30% youth participation)		
	Training materials developed are gender responsive and consider gender issues associated with e-mobility (Yes/No)	None	Training materials developed are gender responsive and consider gender issues associated with e-mobility: Yes		
Output 1.1.2: Capacity development of interested government agencies and	Stakeholders mapping and capacity needs assessment report conducted (Y/N)	None	Stakeholders mapping and capacity needs assessment report conducted: Yes	Stakeholders mapping and capacity needs assessment report	National government continue to low carbon energy and e-mobility solutions

other institutions is provided	Stakeholders mapping and capacity needs assessment report conducted clearly identifies women and youth needs (Y/N)	None	Women's and youth's needs clearly identified in the Stakeholders mapping and capacity needs assessment: Yes	Capacity building programme on e-mobility tailored to government agencies needs in Cabo Verde and respective materials	Stakeholders interested in participating in workshops / capacity building / training sessions Continuous support from business partners, NGOs and other relevant actors for e-mobility development in Cabo Verde
	# of capacity building programmes on e-mobility tailored to government agencies needs in Cabo Verde designed with materials developed	None	Number: at least 1 (one) capacity building programme on e-mobility integrating gender dimensions tailored to government agencies needs in Cabo Verde designed and with materials developed	Capacity building/training session registries Project Annual Reports Relevant reports developed after workshop(s) take place Project M&E System records Electric Mobility Online Platform and other communication materials	
	Training materials developed are gender responsive and consider gender and youth mainstreaming (Yes/No)	None	Training materials developed are gender responsive and consider gender and youth mainstreaming: Yes		
	Training materials developed include environmental and social safeguards mainstreaming topics (Yes/No)	None	Training materials developed include environmental and social safeguards mainstreaming topics: Yes		
	# of capacity building/training sessions on low carbon energy and sustainable e-mobility solutions	None	Number: 2 (two)		

	# of stakeholders participating in capacity building/training sessions on low carbon energy and sustainable e-mobility solutions (sex and age disaggregated)	None	Number: at least 30 stakeholders in total % of women: 50% % of youth: 30%		
	# of newflash on capacity building/training sessions	None	Number: 2		
Output 1.1.3: A roadmap for upscale of low-carbon energy and maritime transport solutions is developed and presented for validation by the Ministry of the Sea and the Ministry of Industry, Trade and Energy	Roadmap on low carbon energy and sustainable e-mobility solutions validated (Yes/No)	No	Roadmap on low carbon energy and sustainable e-mobility solutions validated: Yes	Roadmap on low carbon energy and sustainable e-mobility solutions Workshop registry Project Annual Reports Relevant reports developed after workshop(s) take place Project M&E System records Electric Mobility Online Platform and other communication materials	National government continue to low carbon energy and e-mobility solutions Stakeholders interested in participating in workshops / capacity building / training sessions Continuous support from business partners, NGOs and other relevant actors for e-mobility development in Cabo Verde
	Roadmap is gender responsive and includes gender and youth mainstreaming actions/goals (Yes/No)	No	Roadmap is gender responsive and includes gender and youth mainstreaming actions/goals: Yes		
	# of stakeholders participating in the Roadmap validation workshop (sex and age disaggregated)	None	Number: at least 40 stakeholders % of women: 50% % of youth: 30%		
PC2: Support the supply of a sustainable energy infrastructure to drive low-carbon maritime mobility solutions and related technologies					
Outcome 2.1 Potential of low-carbon energy and transport solutions is demonstrated and recognized					
Output 2.1.1: Feasibility study for broader low-carbon energy and transport solutions is developed	Feasibility studies for the selected pilot projects with final project design and implementation plan developed (Yes/No)	No	Feasibility studies for the selected pilot projects with final project design and implementation plan developed: Yes	Feasibility studies for the selected pilot projects with final project design and implementation plan	National government continue to low carbon energy and e-mobility solutions Continuous support from business

	Feasibility studies include gender and youth mainstreaming strategies (Yes/No)	No	Feasibility studies include gender and youth mainstreaming strategies: Yes	Report on scalable e-mobility investment Project Annual Reports	partners, NGOs and other relevant actors for e-mobility development in Cabo Verde
	Report on scalable e-mobility investment developed (Yes/No)	No	Report on scalable e-mobility investment developed: Yes	Project M&E System records Electric Mobility Online Platform and other communication materials	
	Report on scalable e-mobility investment is gender responsive and includes gender and youth mainstreaming strategies (Yes/No)	No	Report on scalable e-mobility investment is gender responsive and includes gender and youth mainstreaming strategies: Yes		
Output 2.1.2: Infrastructure for the charging of electric batteries is installed in two target villages	# of selected Contractors selected for manufacture and installation of the necessary infrastructure for the charging of electric in the two target villages	None	Number: 1 (one) contractor selected	ToRs for Contractors selection Equipment installed in the villages selected as pilots Annual Report on the pilots submitted by the Community Battery Leasing/Renting Centres	Continuous support from business partners, NGOs and other relevant actors in the EO value chain exists Contractors interested in manufacturing and installing the necessary infrastructure for the charging of electric stations Villages continue to be interested in being the pilots Community Battery Leasing/Renting Centres
	# of villages chosen as pilots for the installation of charging stations	None	Number: at least 2 (two)	Project Annual Reports Project M&E System records Electric Mobility Online Platform and other communication materials	
	# of training workshops/site and yearly refreshers/site on testing, servicing, monitoring and performance improving, refurbishing & repairing and repurposing the batteries	None	Number of workshops: 1 (one)/ site Number of yearly refreshers: 2 (two) / site % women: 50% % of youth: 30%		

	% of Community Battery Leasing/Renting Centres staff receiving training (sex and age disaggregated)	None	Community Battery Leasing/Renting Centres staff receiving training: 100% % women: 50% % of youth: 30%		interested in operating the pilots and reporting on those
	# of annual reports on M&E of the pilots submitted to the PMU	None	Number: at least 3 (three)		
	Annual reports include sex and age disaggregate indicators (Yes/No)	No	Annual reports include sex and age disaggregate indicators: Yes		
	Annual reports include how environmental and social safeguards have been mainstreamed in the pilot (Yes/No)	No	Annual reports include how environmental and social safeguards have been mainstreamed in the pilot: Yes		
	Gender perspectives included in the annual reports on the pilot projects (Yes/No)	None	Gender perspectives included in the annual reports of the pilot projects: Yes/No		
Output 2.1.3: Two (2) Community Batteries Leasing/Renting Centres are established	# Community Batteries Leasing/Renting Centres are established	None	Number: 2 (two)	ToRs for Contractors selection Equipment installed in the villages selected as pilots Annual Report on the pilots submitted by the Community	Continuous support from business partners, NGOs and other relevant actors in the EO value chain exists Villages continue to be
	# of jobs created in the Community Batteries Leasing/Renting Centres (sex and age disaggregated)	0	Number: 4 % of women: 50% % of youth: 30%		

	Business model for providing of charge batteries as a service defined and tested (Yes/No)	No	Business model for providing of charge batteries as a service defined and tested: Yes	Battery Leasing/Renting Centres Project Annual Reports Project M&E System records Electric Mobility Online Platform and other communication materials	interested in being the pilots Villages interested in establishing Community Battery Leasing/Renting Centres to operate/manage the pilots and report on those
Output 2.1.4: Demonstration of low-powered, battery-swap electric marine vessels to demonstrate shared access to electric marine propulsion systems in the two (2) target villages	# of selected Contractors provision of low-powered, battery-swap electric marine vessels to demonstrate a shared propulsion system and demonstrate vessel on-board solar generation in the two target villages	None	Number: 1 (one) contractor selected	ToRs for Contractors selection Equipment installed in the villages selected as pilots Annual Report on the pilots submitted by the Community Battery Leasing/Renting Centres Project Annual Reports Project M&E System records Electric Mobility Online Platform and other communication materials	Continuous support from business partners, NGOs and other relevant actors in the EO value chain exists Contractors interested in manufacturing and installing the necessary infrastructure for the charging of electric stations Villages continue to be interested in being the pilots Community Battery Leasing/Renting Centres interested in operating the pilots and reporting on those
	# of villages chosen as pilots for the installation of low-powered, battery-swap electric marine vessels	None	Number: at least 2 (two)		
	# of training workshops/site and yearly refreshers/site on operating the electric outboards and checking and maintain the batteries and vessels installed	None	Number of workshops: 1 (one)/site Number of yearly refreshers: 2 (two)/per site % women: 50% % of youth: 30%		
	% of Community Battery Leasing/Renting Centres staff receiving training (sex and age disaggregated)	None	Community Battery Leasing/Renting Centres staff receiving training: 100% % of women: 50% % of youth: 30%		

	# of annual reports on M&E of the pilots submitted to the PMU	None	Number: at least 3 (three)		
	Annual reports include sex and age disaggregate indicators (Yes/No)	No	Annual reports include sex and age disaggregate indicators: Yes		
	Annual reports include how environmental and social safeguards have been mainstreamed in the pilot (Yes/No)	No	Annual reports include how environmental and social safeguards have been mainstreamed in the pilot: Yes		
	Gender perspectives included in the annual reports on the pilot projects (Yes/No)	None	Gender perspectives included in the annual reports of the pilot projects: Yes/No		
PC3: Stimulation of the demand for electric battery services					
<i>Outcome 3.1: National and local awareness of low-carbon energy and transport solutions enhanced and supported by information from demonstrations</i>					
Output 3.1.1: Stakeholders? awareness of the benefits, effectiveness and viability of maritime electric mobility is enhanced through community-level awareness raising services provided and educative material disseminated, in particular via the establishment of a public information platform	# of Electric Mobility Online Platform (webpage) operating	None	Number: 1 online website or group of webpages operating, with a specific gender/youth focused tab	Project Annual Reports Project M&E System records Electric Mobility Online Platform Relevant reports developed after workshop(s) or outreach activities are conducted Awareness raising campaign materials Media-radio and TV adverts	National government continue to low carbon energy and e-mobility solutions Stakeholders interested in participating in workshops / capacity building / training sessions Continuous support from business partners, NGOs and other relevant actors for e-mobility development in Cabo Verde
	Electric Mobility Online Platform has a specific gender/youth focused tab (Yes/No)	None	Electric Mobility Online Platform has a specific gender/youth focused tab: Yes		
	# of awareness raising and information campaign	None	Number: 1		
	# of workshops withing the awareness raising and information campaign	None	Number: 2		

	# of people participating in the workshops (sex and age disaggregated)		Number: 100 (50 each) % Women: 50% % Youth: 30%		
	# of people reached by awareness raising and information sharing events (sex-disaggregated and age-disaggregated)	None	Number: 2,000 % Women: 50% % Youth: 30%		
	# event summaries or proceedings produced by the PMU	None	Number: 2 for each workshop		
	Information dissemination materials developed for awareness raising campaign are gender sensitive and include gender and youth perspectives (Yes/No)	None	Information dissemination materials developed for awareness raising campaign are gender sensitive and include gender and youth perspectives: Yes		
	Information dissemination materials developed for awareness raising campaign developed in Portuguese and English(Yes/No)	None	Information dissemination materials developed for awareness raising campaign developed in Portuguese and English: Yes		
Output 3.1.2: Demonstration projects showcased through case studies	# of case studies compiled on pilot project	0	Number: 2	Case Studies on pilots Project Annual Reports Project M&E System records Electric Mobility Online Platform	National government continue to low carbon energy and e-mobility solutions Continuous support from business partners, NGOs and other relevant actors for e-mobility development in Cabo Verde
	Case studies compiled on pilot project are gender sensitive and include gender and youth perspectives (Yes/No)	No	Case studies compiled on pilot project are gender sensitive and include gender and youth perspectives: Yes		

Output 3.1.3 Awareness raising sessions and training programs provided on the results and learnings from the demonstrations	# of events where information on e-mobility in Cabo Verde was disseminated by the PMU/STBU unit (Yes/No)	None	Number: 6 (six)	Reports on the events, events agenda Presentations / materials showed at events	National government continue to low carbon energy and e-mobility solutions Stakeholders interested in participating in events to disseminate information on the project results
	Information shared on events on e-mobility in Cabo Verde integrates gender and youth perspectives (Yes/No)	No	Information shared on events on e-mobility in Cabo Verde integrates gender and youth perspectives: Yes	Project Annual Reports Electric Mobility Online Platform	
PC4: Monitoring and Evaluation					
Outcome 4.1: Monitoring of results and evaluation					
Output 4.1.1 Project effectively monitored	# of M&E systems developed for the Project, including tracking of gender mainstreaming strategy and action plan	None	Number: 1 M&E system developed during Y1 for implementation, including tracking of gender mainstreaming strategy and action plan	M&E System Project?s Communication Strategy & Plan Knowledge Management System & Plan Project Annual Reports Package of training materials developed	PMU established Commitment from project partners in collaborating with M&E activities
	Project?s Communication Strategy & Plan and Knowledge Management System & Plan developed with indication on how to address gender perspectives in project communications and on knowledge material (Yes/No)	None	Project?s Communication Strategy & Plan and Knowledge Management System and Plan developed with indication on how to address gender perspectives in project communications and on knowledge material: Yes	Training reports Electric Mobility Online Platform	

	# of trainings on the M&E system delivered to enhance national capacity, including gender perspectives	None	Number: at least 1 training delivered to implementing partners (e.g., Community Battery Leasing/Renting Centres) and other partners involved in the implementation of the Project activities, including gender perspectives	
	Gender training package (material for national capacity building on gender awareness) to be integrated in workshops of the project (Yes/No)	None	Gender training package (material for national capacity building on gender awareness) to be integrated on workshops of the project: Yes	
	% of women and % of youth participating in the training events	0%	% Women: 50% % Youth: 30%	
	# Gender focal point appointed within the PMU	0	Number: 1	
	% of PMU staff that have completed the ? I know gender? course	0%	100%	
Output 4.1.2: Mid-term review and independent terminal evaluation conducted	# mid-term reviews conducted	None	Number: 1 mid-term review conducted	MTR Report
	# Independent terminal evaluations conducted	None	Number: 1 independent terminal evaluation conducted	TE Report

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).

The following comments provided at PIF stage are taken into consideration at this CEO Endorsement:

- The pre-feasibility/feasibility study (analysis of battery swapping for fishing vessels in Cabo Verde) was conducted at PPG stage and is included in the CEO documents.
- An updated Letter of Endorsement is provided to make it matched the Portal.
- A list of existing and planned (in pipeline) renewable energy projects in CV included in CEO.
- Co-financing letters attached
- Updated GHG excel sheet
- An excel sheet with the GHG calculations provided

ANNEX C: Status of Utilization of Project Preparation Grant (PPG).

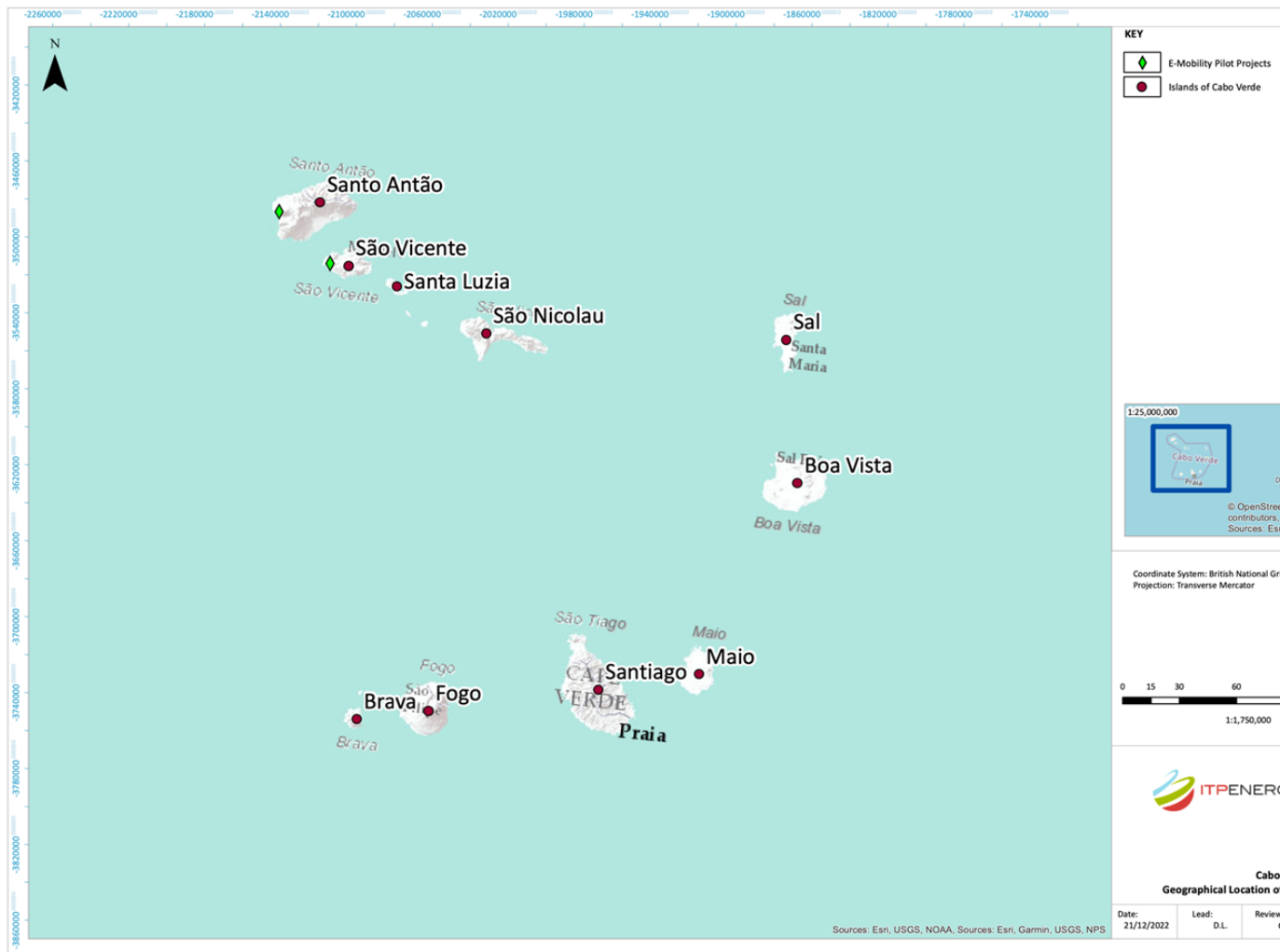
(Provide detailed funding amount of the PPG activities financing status in the table below:

The remaining PPG resources will be used for national consultant to conduct feasibility study.

PPG Grant Approved at PIF:			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
Stakeholder engagement activities during PPG	5,000	5,000	0
Analysis of baseline and ongoing/planned initiatives	8,000	8,000	0
Selection of project executing entity	15,000	15,000	0
Development of project documents including: ? Environmental and social management plan (ESMP) ? Gender analysis/assessment ? Stakeholder Engagement Plan ? GHG reduction potential calculations ? Baseline report	22,000	8,200	9,900
Total	50,000	36,200	9,900

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



1. Monte Trigo (Santo Ant?o Island): [17.021208, -25.316973](#) GEO Name ID- 3374213

2. S?o Pedro (S?o Vicente Island): [16.835750, -25.066449](#) GEO Name ID- 3374197

GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. These IDs are available on the [GeoNames? geographical database](#) containing millions of placenames and allowing to freely record new ones. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate. Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a

conversion tool as needed, such as:<https://coordinates-converter.com> Please see the Geocoding User Guide by clicking [here](#).

Location Name	Latitude	Longitude	Geo Name ID	Location & Activity Description
Cabo Verde -	16	-24.01		<input type="checkbox"/>
Monte Trigo (Santo Antao Island)	17.021208	-25.316973		<input type="checkbox"/>
Sao Pedro (Sap Vicente Island)	16.835750	-25.066449		<input type="checkbox"/>

ANNEX E: Project Budget Table

Please attach a project budget table.

Categories by Year	Total Project Components (USD)				Sub-total (USD)	M&E (USD)	PMC (USD)	Total GEF (USD)
	PC1	PC2	PC3	PC4				
Year 1								
International Consultant	14,600	-	-	-	14,600	-		14,600
Local Consultant	-	-	15,000	12,000	27,000	12,000	22,740	49,740
	-	537,646	-	-	537,646	-		537,646
Consultancy Services - Company								
Training / Workshops / Meeting	4,600	-	-	-	4,600	-		4,600
Travel	-	-	-	-	-	-	-	-
Office Supplies	-	-	-	-	-	-	-	-
Total Year 1	19,200	537,646	15,000	12,000	583,846	12,000	22,740	606,586
Year 2								
International Consultant	-	-	-	-	-	-	-	-
	-	1,800	15,000	3,000	19,800	3,000	22,740	42,540
Local Consultant								
	60,000	12,900	-	20,000	92,900	20,000		92,900
Consultancy Services - Company								
Training / Workshops / Meeting	14,500	-	5,000	-	19,500	-	-	19,500
Travel	-	-	6,000	-	6,000	-	-	6,000
Office Supplies	-	-	-	-	-	-	-	-
Total Year 2	74,500	14,700	26,000	23,000	138,200	23,000	22,740	160,940
Year 3								
International Consultant	-	-	-	-	-	-	-	-
Local Consultant	-	1,800	14,200	3,000	19,000	3,000	22,740	41,740
Consultancy Services - Company	60,000	12,900	-	-	72,900	-		72,900
Training / Workshops / Meeting	4,000	-	5,000	-	9,000	-	-	9,000
Travel	-	-	6,000	-	6,000	-	-	6,000
Office Supplies	-	-	-	-	-	-	-	-
Total Year 3	64,000	14,700	25,200	3,000	106,900	3,000	22,740	129,640
Year 4								
International Consultant	-	-	-	-	-	-	-	-
Local Consultant	-	1,800	14,200	3,000	19,000	3,000	22,740	41,740
Consultancy Services - Company	-	32,900	-	25,000	57,900	25,000		57,900
Training / Workshops / Meeting	1,000	-	5,000	-	6,000	-	-	6,000
Travel	-	-	6,000	-	6,000	-	-	6,000
Office Supplies	-	-	-	-	-	-	-	-
Total Year 4	1,000	34,700	25,200	28,000	88,900	28,000	22,740	111,640
Total Years 1 - 4	158,700	601,746	91,400	66,000	917,846	66,000	90,960	1,008,806

601746

917,846	66,000	90,960	1,008,806
---------	--------	--------	-----------

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

Not applicable.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat

or the Trustee) in the Document Section of the CEO endorsement. The Agency is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

Not applicable.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).

Not applicable.