GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

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February 21, 2012

Dear Council Member:

UNIDO as the Implementing Agency for the project entitled: ***Cape Verde: SPWA-CC Promoting market based development of small to medium scale renewable energy systems in Cape Verde,*** *under the Regional: SPWA-CC: GEF Strategic Program for West Africa: Energy Component (PROGRAM)*, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNIDO procedures.

The Secretariat has reviewed the project document. It is consistent with the objectives of the program approved by the Council in March 2010. The scope of the project activities, however, has changed since work program entry. The GEF grant amount has increased by $40,000 to cover eligible incremental costs. The changes in the various cost elements from the original concept approved by the Council and as recommended in the final project design is summarized in the attached note from the UNIDO.

We have today posted the proposed project document on the GEF website at www.TheGEF.org for your information. We would welcome any comments you may wish to provide by March 20, 2012 before I endorse the project. You may send your comments to gcoordination@TheGEF.org.

If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Monique Barbut
Chief Executive Officer and Chairperson

Attachment: Project Document

Copy to: Country Operational Focal Point
GEF Agencies
STAP
Trustee

REQUEST FOR CEO ENDORSEMENT/APPROVAL

PROJECT TYPE: FULL-SIZED PROJECT
THE GEF TRUST FUND

Submission Date: October 2011

PART I: PROJECT INFORMATION

GEFSEC PROJECT ID: 3923
GEF AGENCY PROJECT ID: XX/CVI/09/X01
COUNTRY(IES): Cape Verde
PROJECT TITLE: Promoting market-based development of small to medium-scale renewable energy systems in Cape Verde
GEF AGENCY(IES): UNIDO
OTHER EXECUTING PARTNER(S): Ministry of Industry and Energy, ECOWAS Centre for Renewable Energy and Energy Efficiency
GEF FOCAL AREA(s): Climate Change
GEF-4 STRATEGIC PROGRAM(s): **CC-SP3**-RE
NAME OF PARENT PROGRAM/UMBRELLA PROJECT: A National Level Project in Cape Verde under the GEF Programmatic Approach on Access to Energy in West Africa

Expected Calendar (mm/dd/yy)	
Milestones	**Dates**
Work Program (for FSPs only)	March 2010
Agency Approval date	October 2011
Implementation Start	March 2012
Mid-term Monitoring	August 2013
Project Closing Date	February 2015

A. PROJECT FRAMEWORK (Expand table as necessary)

Project Objective: To create market conditions conducive to the development of small to medium scale renewable energy systems in Cape Verde

Project Components	**Indicate whether Investment, TA, or STA**[2]	**Expected Outcomes**	**Expected Outputs**	**GEF Financing**[1]		**Co-Financing**[1]		**Total (1000$)** c=a+ b
				(1000$) a	%	(1000$) b	%	
1. Demonstrating technical feasibility and commercial viability of small to medium scale RE projects and establishment of seed fund for project replication	Investment,	Feasibility and viability of small to medium scale renewable energy technologies demonstrated. Renewable energy installed capacity of 1.6MW	1.1 Three demonstration projects designed and implemented	1013.900	15	5534.900	85	6548.800
		Over 2MW installed capacity is realized from the Scaling of renewable energy projects making used of the seed funding with contributions from the ECOWAS Renewable Energy Facility (EREF) and GEF.	1.2 Specialised renewable energy seed fund established for Cape Verde with contributions from ECREEE's ECOWAS Renewable Energy Facility (EREF) and GEF	413.302	37	706.400	63	1119.702
2. Resource Assessment and scaling up strategy	TA	Investment and business strategy for scaling up established.	2.1 Investment and business strategy for scaling up or replicating small to medium scale renewable energy projects in the country developed and presented to policy makers for adoption.	73.600	98	1.662	2	75.262
	TA	Report detailing options to provide 100% RE	2.2 Study of options to provide 100% RE electricity for Brava	0.00	0	52.000	100	52.000

		electricity to Brava						
3. Consolidating a comprehensive legal and regulatory framework conducive to the development of small to medium scale renewable energy projects.	TA	Establishment of legal and regulatory framework for promoting and supporting small to medium scale renewable energy in Cape Verde	3.1 Regulation, strategy and action plan for developing small to medium scale renewable energy technologies developed and presented to lawmakers for adoption.	12.600	23	41.062	77	53.662
			3.2 Policy and regulatory propositions for integrating small to medium scale renewable energy into economic and social sectors such as education, health etc developed and adopted.	12.600	22	45.399	78	57.999
4. Capacity building and awareness raising	TA	National institutions and private stakeholders are in a position to effectively support the market for small to medium scale renewable energy projects	4.1 Training programme directed at 10 MTIE and ECREEE staff on project management developed, and training conducted on a train-the-trainer basis. 4.2 Awareness raising programmes including targeted seminars; coaching clinics held. 12 half a day meetings targeting 50 companies organised 4.3 Training programmes for market enablers and market players especially entrepreneurs, banks etc developed and training conducted. Within this output 20 RE experts will be trained as trainers, 40 people trained in RE project identification, design, implementation and operation. 4.4 The demonstration project are independently evaluated and lessons learnt are widely disseminated through various media.	82.880	37	142.718	63	225.598
5. Project management and coordination	TA	MTIE and ECREEE manage and coordinate the project effectively with support from stakeholders.	5.1 Project management office is established at the ECREEE Secretariat and key staff of the PMO in place 5.2 Project dedicated website established and project milestones, reports etc regularly posted on the website.	149.300	31	332.280	69	481.580
Total Project Costs				1758.182 82		6856.421		8614.603

[1] List the $ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.
[2] TA = Technical Assistance; STA = Scientific & Technical Analysis.

B. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT (expand the table line items as necessary)

Name of Co-financier (source)	*Classification*	*Type*	*Project*	*%**
UNIDO	Implementing Agency	Cash	60,000	0.88%
UNIDO	Implementing Agency	In Kind	140,000	2.04%
Government of Cape Verde	National Government	In-kind	131,613	1.92%
Government of Cape Verde	National Government	Cash	68,059	0.99%
ECREEE	Regional Center	Cash/	780,000	11.38%
ECREEE	Regional Center	In-kind	176,172	2.57%
Electra	National Utility	Cash	3,513,400	51.24%
Água Brava Electric	Private Sector	Cash	1,287,220	18.77%
Brava Island Municipality	Municipality	Cash	50,400	0.74%
Mindelo Hospital	Private Sector	Cash	67,100	0.98%
Ribeira Grande Minucipality	Municipality	Cash	319,000	4.65%
Carriçal Municipality	Municipality	Cash	187,500	2.73%
São Nicolau Minicipality	Municipality	Cash	67,837	0.99%
IEFP	Government Institution	In-Kind	8,120	0.12%
Total Co-financing			**6,856,421**	**100.00%**

* Percentage of each co-financier's contribution at CEO endorsement to total co-financing. UNIDO's in-kind contribution mentioned in table above refers to time and effort of the Project Manager to the project especially in overall project management, monitoring and reporting.

C. FINANCING PLAN SUMMARY FOR THE PROJECT ($)

	Project Preparation a	*Project b*	*Total c = a + b*	*Agency Fee*	*For comparison: GEF and Co-financing at PIF*
GEF financing	60,000	1,758,182	1,818,182	181,818	1,758,182
Co-financing	90,000	6,856,421	6,946,421		5,950,000
Total	150,000	8,614,603	8,764,603	181,818	7,708,182

D. GEF RESOURCES REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES)[1]

GEF Agency	*Focal Area*	Country Name/ *Global*	*(in $)*		
			Project (a)	*Agency Fee (b)*[2]	*Total c=a+b*
N/A	N/A				
Total GEF Resources			0	2	0

[1] No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

[2] Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee.

E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	*Estimated person weeks*	*GEF amount ($)*	*Co-financing ($)*	*Project total ($)*
*Local consultants**	212	64,480	101,120	165,600
*International consultants**	140	235,200	184,800	420,000
Total	352	299,680	285,920	585,600

* Details to be provided in Annex C.

F. PROJECT MANAGEMENT BUDGET/COST

Cost Items	*Total Estimated person weeks*	*GEF amount ($)*	*Co-financing ($)*	*Project total ($)*
*Local consultants**	94.5	81,500	80,000	161,500
International consultants(M&E)*	6	18,000	60,000	78,000
*Office facilities, equipment, vehicles and communications**		34,800	157,480	192,280
*Travel**		15,000	34,800	49,800
Total	**100.5**	**149,300**	**332,280**	**481,580**

* Details to be provided in Annex C.

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? yes ☐ no ☒

(If non-grant instruments are used, provide in Annex E an indicative calendar of expected reflows to your agency and to the GEF Trust Fund).

H. DESCRIBE THE BUDGETED M &E PLAN:

Project monitoring and evaluation (M&E) will be carried out in accordance with established UNIDO and GEF guidance and procedures. The overall objective of the monitoring and evaluation process is to ensure successful and quality implementation of the project by: i) tracking and reviewing project activities execution and actual accomplishments; ii) providing visibility into progress as the project proceeds so that the implementation team can take early corrective action if performance deviates significantly from original plans; and iii) adjust and update project strategy and implementation plan to reflect possible changes on the ground, results achieved and corrective actions taken.

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

a) Renewable energy generation and GHGs emission reductions directly generated by the UNIDO GEF project. These will include the type and the number of small to medium scale renewable energy projects developed and implemented.
b) Renewable energy generation and GHGs emission reductions in-directly generated by the UNIDO GEF project. These will include type and the number of small to medium scale renewable energy projects developed and implemented due to the increased capacity and conducive environment for the projects.
c) Renewable energy investment generated by the UNIDO GEF project, directly and indirectly.
d) Development of policy, legislative and regulatory frameworks aimed to promote and support a renewable energy market.
e) Level of awareness and technical capacity for small to medium scale renewable energy within relevant institutions, in the market and within enterprises.
f) Private sector contribution to the implementation of the project.
g) Overall socio-economic impacts of the project to include increase in productive capacities, gender balance etc

The National Project Manager will be responsible for continuous monitoring of project activities execution, performance and track progress towards milestones. However, monitoring and evaluation of the demonstration projects with respect to energy generation, technical performance, commercial viability and GHGs emission reduction, and

related information, will be integral part of the evaluation component of Project Component 1. The UNIDO project manager will be responsible for tracking overall project milestones and progress towards the attainment of the set project outputs. The UNIDO project manager will be responsible for narrative reporting to the GEF. Two project evaluations will be carried out – one mid-term evaluation and a final external evaluation 6 months after operational completion of the project. The following table provides the tentative budget for the evaluation and each evaluation will cost around US$ 39,000.

Source of funding	**USD**
GEF funding	60,000
Co-financing (UNIDO)	18,000
Total	78,000

PART II: PROJECT JUSTIFICATION:

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:

1. The Issue

Cape Verde is a small country consisting of 10 small islands and 13 islets located in the Atlantic Ocean due west of the westernmost point of Africa. It has total area of 4033 square kilometres and total population of about 542,000 inhabitants of which 55% live in urban areas according to recent census. The 9 inhabited islands rely heavily on imported fuel (particularly diesel and heavy oil) for their power generation and transportation needs.

The country receives very minimal and infrequent rainfall. Sea water desalination is the only source of potable water for most of the islands that do not have micro climates. As such, water desalination consumes a significant part of the power generated in the country, implying that the power and water supply sectors are closely linked.

Each island operates its own local electricity grid that runs on petroleum products (renewable energy production represents only 3% of the generation capacity in 2009). Due to the grid-connected wind and solar power projects the renewable energy penetration rate is expected to increase to 15% by the end of 2011. As a result of the electrification projects that have been developed in recent years electricity coverage in Cape Verde is around 90%, varying from island to island. For most of the non electrified areas, there is dependence on localised power grids that run on fossil fuels. At the country level and at the levels of specific islands, power demand is rapidly growing and is already close to the supply capacity. As a result the dependence an imported petroleum products is increasing and exerting a heavy burden on the national budget. Besides electricity, others forms of energy used for cooking are biomass and gas. The government promotes the adoption of cooking gas as a strategy to reduce deforestation in rural areas.

Cape Verde has, in the recent past, continued to register positive socio-economic growth as demonstrated by the transition of its status to a middle income country. There has also been a corresponding positive change in affluence amongst the population. In parallel to this, the country's tourism sector has continued to grow particularly on some islands. These changes have contributed to a corresponding increase in demand for petroleum products, electricity and desalinated water and consequently carbon emissions. Therefore, Cape Verde as a country and particularly some islands are faced with increasing power deficit that is already hampering economic and social development. Although considerable investments have been made in power infrastructure in the last few years, they have largely failed to address the ever widening power supply shortage on some islands (particularly the main city and the tourist islands such as Sal and Boa Vista). Besides, these investments have focused on expanding the current fossil fuel based power generation capacity and distribution networks. This is however so despite of the country being endowed with different renewable energy resources mainly wind and solar energy that, if developed, could augment current power supply systems. The high electricity tariffs that the country experiences would potentially make investments in grid connected and decentralized renewable energy projects financially viable even without subsidies or feed-in tariffs. In 2011 the electricity consumer tariffs reached 25 Euro/cents per kwh (below 60 kwh consumption) and 32 Euro/cents (higher than 60 kwh consumption). Likewise, replacing the fossil fuel based capacity in localised grids in remote areas that are not connected to the central grid in each island with renewable energy resources would reduce cost of energy services, reduce GHG emissions, and improve supply security. The distributed nature of power grids i.e. one grid for each island, would also support the possibility of integrating small to medium scale renewable energy systems into existing grids or stand alone grids for areas that are not currently accessed by the central grids. In addition, the relatively small sized nature of the islands, ranging from 991 to 35 km^2, supports the possibility of small to medium scale and localised renewable energy systems, either grid connected or stand alone.

According to the First National Communication (FNC), in 1995 Cape Verde emitted 330,901 tonnes of CO_2 equivalent (tCO_2e) of which carbon dioxide emissions (CO_2) accounted for approximately 74.1% of this total. The emissions from fossil fuels were responsible for 66.5 % of the total emissions in Cape Verde, while agriculture, biomass and solid residues & wastewater were responsible, respectively, for 11.9%, 11.5 % and 10.1%. The origin of emissions from energy sources in 1995 was mainly from fossil fuels (65%) and fuel wood and biomass (35%), totalizing 337.3Gg of CO2 equivalent. With increased fossil fuel based power systems having developed in the recent past, the current levels of GHG emissions from this sector is expected to be much higher than this estimate. In addition, this estimate is set to

grow as more fossil fuels based power plants are built to address the current power deficit both for grid connected and remote areas.

The traditional response to the widening power supply gap faced by the country entails increased oil-based power generation capacity that would have global environmental impacts as well as budgetary implications at national level. This would effectively lock the country into an electricity infrastructure based on fossil fuels. Therefore, market based development of power systems that are based on locally available renewable energy resources in the country would usher a double dividend of global environmental and local socio-economic benefits. More specifically, the benefits to be realised include, increased energy supply security, avoided GHG emissions, and relief on the budget of the state, private households and companies.

The Government of Cape Verde has launched a commendable plan to reduce the country's dependence on imported fossil fuels through increased energy production from renewable resources. Through private-sector investment and government-supported projects, Cape Verde intends to generate at least 25% of electricity from renewable sources by the year 2011 and 50% by the year 2020. The Government initiated the development of a comprehensive green investment plan which identified possible grid-connected solutions with an overall investment volume of 250 million Euros. Major grid-connected projects in solar power (5 MW for Santiago and 2.5 MW for Sal) and wind power (28 MW for Santiago, S.Vicente, Sal and Boavista in total) are in the final stage of implementation. The solar parks were inaugurated in 2010 and the construction works for the wind power projects is intended to be finalized in 2011. Apart from grid-connected solutions the Cape Verdean Government envisages to increase the utilization of small- and medium sized solutions which could provide competitive electricity to remote settlement, decrease the peak load and has the potential to create local employment. With that the Government also responds to the technical limitations of the grids (grid stability) to increase the share of intermediate renewable energy power sources (wind and PV) to more than 25%.

According to data from ELECTRA in 2009, the electricity production in Cape Verde is based on thermal power stations running on heavy fuel or diesel (97%); and a small percentage of wind energy (3%). With the introduction of the above referred large renewable energy projects the RE penetration rate is expected to increase from 3% in 2009 to 20% to 25% after the implementation of these projects.

The introduction of large renewable energy projects in Cape Verde is on the way, however by developing only large scale energy projects with high up-front investment costs the Government targets will probably not be completely achieved. Large scale projects have high infrastructural development needs and may pose a great stress to the existing grid and thus they will not constitute the only solution to address the electricity production and supply in smaller islands of Cape Verde, in remote areas for which there is no grid connection and electricity is only available a few hours a day and for small areas with smaller electricity demand needs. Furthermore, the fragmented nature of power grids due to the geographical characteristics of the country tends to discourage potential large-scale investors due to the perceived limited market potential. Therefore there is need for a deliberate effort to promote investments in small to medium scale renewable energy projects that would both meet the country’s needs and would not need huge and complex financial arrangements that are required in the case of large scale projects. Small to medium scale renewable energy systems have much smaller infrastructural development needs, reduced up-front investment and maintenance costs and, in the cases of the grid connected ones, will pose much smaller stress to the existent grid when connected to it. Moreover only when coupling the installation of large systems with small to medium scale renewable energy systems, the existing renewable energy potential may be utilized to its maximum potential, electricity can be provided on a 24 hours basis to remote populations that use isolated fuel based systems and Government targets can be achieved in a cost-efficient way.

The Government has projects under way to identify renewable energy resources available in Cape Verde however only the installation of large scale renewable energy projects is being pursued. Renewable energy resource analysis that was carried out in Cape Verde not only identified renewable energy resources that can be utilised for large scale development but also refers to a large potential for smaller to medium scale systems to be taped. This project looks into the potential for the development of small to medium scale renewable energy projects that can play a significant role in achieving the Governments targets and addressing some of the currently existing barriers to market-based development of renewable energy projects in Cape Verde. This project also aims to create a potential market in Cape Verde for small to medium scale renewable energy systems which requires smaller up-front investments, for which money can be raised from international support and locally, and will lead to great local economic savings and shorter periods for investment return.

An analysis of the energy sector in Cape Verde was carried out as part of the PPG activities; this is provided in Annex F6 of the Project Document. As a result of this analysis barriers to the development of small to medium scale renewable energy projects were identified and the objectives of this project refined to assist in overcoming these barriers. The barriers identified are summarised below.

Financial Barriers

Financial barriers fall into two categories - affordability and access to finance. Affordability is a problem due to the high upfront investment cost of renewable energy technologies and inadequate financing mechanisms. Some financial institutions perceive renewable energy technologies as unreliable and lacking long-term viability. For smaller projects it is particularly difficult to mobilise due to the risk capital for the development (e.g. feasibilities, measurements). The sector has been relying more or less on external donor funding (e.g. soft loan credit line of Portugal, grants for project development from different donors).

In Cape Verde , with the recent introduction of the Decree-law n.1/2011 of 3rd of January on Promotion and Incentive for the Use of Renewable Energy rules concerning the promotion, incentives and access to licence and exploration of the independent production of electricity using renewable energy sources were introduced in Cape Verde. This Decree Law with the objective of promoting and incentivising the use of renewable energy in Cape Verde, introduces a group of incentives for renewable energy development such as: fiscal incentives; a transparent and stable system of remuneration for the sale of energy produced during a period of 15 years with payment options that offer guarantees to sponsors, namely the creation of the Renewable Production Credits; a special regime for micro-generation, with the right to sell the produced energy at the same price at which the electricity is purchased and a fund for the Promotion of Decentralized Rural Electrification. This decree-law is expected to address to a great extent financial barriers for the development of renewable energy in Cape Verde, however it is still quite recent and the sector is expected to keep relying more or less on external donor funding (e.g. soft loan credit line of Portugal, grants for project development from different donors) for up-front investment costs. Still with the introduction of this decree the difficulty of mobilising risk capital for the development of smaller scale projects (e.g. feasibilities, measurements) is expected to continue. For energy efficiency projects there are so far no national programs or incentives to foster its development and implementation

High capital costs / Limited budgets

Although lower fuel and operating costs may make renewable energy cost-competitive on a life-cycle basis, higher initial capital costs can mean that renewable energy provides less installed capacity per dollar invested than conventional HFO or diesel generation. Renewable energy therefore requires a greater level of financing for the same capacity. Financial institutions may require a premium in lending rates because more capital is being risked up-front compared to conventional generation projects.

Small to medium scale renewable energy systems present smaller up-front investment costs than large scale projects, as well as a better adaptation to the geographical nature of the country. However when compared to larger projects, small to medium scale renewable energy projects have high development (e.g. feasibilities, measurements) costs, as the potential to generate dividends is smaller. Potential investors include the public sector (ELECTRA and the Government) and the private sector (IPPs, potential customers and households). However the high capital of most renewable energy makes it out-of-reach of most Cape Verdeans. Government and ELECTRA budgets are limited and the demand for financing various national priority areas is great so allocating resources for renewable energy projects is difficult. For the private sector there are also competing priorities for their budgets. The concern of households is the initial capital cost, so it may be necessary to organize a financial package which allows householders to purchase renewable energy systems and spread the payment.

High transaction costs

Renewable energy projects are typically smaller size than conventional energy projects. Projects may require additional information not readily available, or may require additional time or attention to financing or permitting because of unfamiliarity with the technologies or uncertainties over performance. For these reasons, the transaction costs of renewable energy projects—including resource assessment, sitting, permitting, planning, developing project proposals, assembling financing packages, and negotiating power-purchase contracts with utilities—may be much larger on a per-

kilowatt (kW) capacity basis than for conventional power plants. These higher transaction costs add to the costs of renewable projects.

Financing institutions / Banking sector loan rates
There is no experience within the financial institutions in lending on renewable energy projects so there are no dedicated financing mechanisms that take into consideration the nature of small to medium scale renewable energy based investment projects especially the need for high capital upfront and the long payback periods. In addition the capacity within financial institutions and power utilities to appraise renewable energy proposals is limited or non-existent. The cost of borrowing capital in Cape Verde is high and the longer pay-back periods required for renewable energy projects are deems risky to finance. The bank's interest rates on loans in Cape Verde are currently higher than 7.5%. Foreign currency loans are available at lower costs however since the revenues for renewable energy projects within the country will be in local currency the financial institutions are unwilling to lend in foreign currency.

Experience from past efforts in developing renewable energy projects in Cape Verde, in particular wind energy projects shows that the process of mobilising finance from different sources for large projects normally takes too long to realise. As such the private sector would need to make significant investments in the preparation of such projects and setting up the financial arrangements to realise potential investments. Given the sizes of the investment required for such projects and the associated costs, potential small to medium scale investors tend not to be able to participate in such projects. On the other hand, the fragmented nature of power grids due to the geographical characteristics of the country tends to discourage potential large-scale investors due to the perceived limited market potential.

Regulatory Barriers
Support for renewable energy and lack of institutional capacity
Cape Verde has made positive steps towards a supportive framework for renewable energy and has already implemented some of the support mechanisms recommended internationally such as allowing the private sector to operate through Independent Power Producers (IPPs), a licensing regime, a regulatory body (ARE) and clear responsibilities within the energy sector for policy, regulation and provision of energy. Also it has recently enacted the Decree-Law on the Promotion and Incentives for the Use of Renewable Energy (DLn.1/2011, of 3rd of January) that supports renewable energy development and creates the instruments to incentivize the development of this market in Cape Verde. This decree-law establishes a much needed conductive regulatory framework that will stimulate investment by both local and international investors into small to medium scale renewable energy projects.

However this decree-law is still quite recent and there is a need to make it operational. Moreover more needs to be done if renewable energy is to be actively incentivized and encouraged. Within the Cape Verde National Energy Policy is stated Cape Verde's goals in terms of renewable energy as well as indicates the renewable energy technologies that will be targeted and developed in the short term. In addition, and in order to facilitate business planning, and guide national efforts and facilitate investment in renewable and alternative energy, the policy also creates the National Renewable Energy Company. However there is a need to lay out a plan to achieve the proposed objectives. More legislation should be formulated and presented to the Government to further strengthen the market.

Furthermore the institutional capacity and competencies within the energy sector are limited, especially in relation to the formulation and implementation of policies as well as in regulation. The recently enacted the Decree-Law on the Promotion and Incentives for the Use of Renewable Energy was developed by Cape Verde's Government.

Although there is a now a robust package of legislation and incentives for developing renewable energy projects in the country, there have been no efforts to coordinate efforts to develop the renewable energy sector in conjunction with other sectors such as education, health, tourism etc where such interventions would be appropriate and cost effective. Thus although there is conductive legal and regulatory framework supporting small to medium-scale renewable energy projects there is as a lack of expertise to implement substantive and effective policies and programmes to promote and support renewable energy development.

Cape Verde already has the legal framework to allow the operation of IPPs and there is experience with a few IPPs negotiating power purchase agreements (PPAs) with ELECTRA. Now with the introduction of the new decree law on the Promotion and Incentives for the Use of Renewable Energy, there is a clear mechanism for the calculation of the

tariff in the PPA for renewable energy projects. However, in order to accelerate the process and assure consistency, there is a need to establish a standard PPA for renewable energy.

There is also a lack of capacity by institutions, market players and market enables that would be needed to establish and operate a market for small to medium scale renewable energy projects. For the implementation of small to medium scale renewable energy projects there is a need to enhance not only institutional capacity and set up so as to effectively support the development of this projects but as well to enhance the capacity of the other market players, such as market enablers (policy makers) regulators, entrepreneurs, project developers and financial institutions as these players often have often problems to appraise small to medium scale renewable energy projects. All these players need to strength their capacity and competencies on small to medium scale renewable energy projects, their benefits as well as in the importance of their active role on that.

Technical barriers

Insufficient technical capacity in the market to identify, develop and implement renewable energy projects

There is a limited technical capacity to design, install, operate, manage and maintain renewable energy based modern energy services, mainly due to a lack of experience in this (new) field.

Meetings and discussions during the PPG show that there is a limited understanding of the opportunities for renewable energy and weak capacity to be able to develop and implement any small to medium scale renewable energy projects. Existing local companies in the sector are further weakened through strong international competition entering the market, lack of north-south business partnerships and non-existing support for local companies in the sector. ELECTRA, which is the entity to develop electricity generation projects, has a low capacity for managing as well as attending electricity demand. There is a need to demonstrate the technical viability of small to medium scale renewable energy technologies that would be suitable for Cape Verde needs, i.e. solar and wind.

Bulk procurement of renewable energy technologies is limited due to the current small market for renewable energy based modern energy services. Hence the local infrastructure to support small to medium scale renewable energy development does not exist or is very limited and local manufacturing and/or assembly of renewable energy technology components is lacking, along with knowledge, skills, expertise and facilities.

Finally there is a need to ensure that installers/contractors are suitably qualified to ensure that small to medium scale renewable energy systems do not fail because of unsatisfactory installation and maintenance practices. There are no quality control, norms and standards in terms of renewable energy performance, manufacture, installation and maintenance and thus there is a danger that poorer quality goods are imported.

Technical limitation of integrating renewable energy systems in to the grid

Regarding grid-connected renewable energy one of the most significant barriers is the technical limitation of integrating variable wind and solar resources in to the grid. The existent grid is quite weak, which does not ensure that produced energy is in fact delivered to the consumers due to structural problems as well as restricts the addition of capacity, and thus restricts the development of small to medium scale renewable energy projects. Furthermore there is a mismatch between peak electricity demand in the evening and lower solar radiation and wind resources.

Information and awareness barriers

Limited information on small to medium scale renewable energy technology and opportunities

There is poor awareness of small to medium scale renewable energy technologies and the opportunities they can offer beyond the solar water pumping systems and large wind farms and other available cost-effective technology options have not been considered systematically (e.g. solar thermal systems, energy efficiency improvements). Therefore there is limited knowledge of the small to medium scale renewable energy market potential and availability and access to existing renewable energy resource information is also limited.

Lack of understanding of the commercial viability of renewable energy projects

Since energy costs are so high most enterprises now pay great attention to energy costs, however they have limited awareness and understanding of the financial and qualitative benefits that renewable energy can deliver. This is consequence of lack of information about what is technically feasible and what is commercially available. There are no demonstration projects and no structured renewable energy dissemination and education programmes. Knowledge on,

for example, the fact that life cycle costs of renewable energy technologies are often competitive or even lower, is mostly absent. Availability of renewable energy resources is very site specific, requiring detailed analysis of the local specific conditions.

2. How the Project Seeks to Address the Issue

The ultimate goal of the project is to reduce greenhouse gas emissions and to support sustainable development in Cape Verde by creating market conditions conducive to the development of small to medium scale renewable energy systems in line with national energy policy objectives of making the country less dependent on imported fossil fuels. The project seeks to address many of these existing barriers to renewable energy, to deliver measurable results and to make an impact on investment in small to medium scale renewable energy in Cape Verde an integrated approach that combines substantial capacity building with technical assistance interventions at the policy and demonstration project level. Primary target beneficiaries of the project are energy regulators and implementing institutions, potential energy generators (managers and engineers), energy users, training institutes, energy professionals and service providers and the financial sector.

The project consists of four technical components.

Project Component 1 (PC1) will demonstrate the technical feasibility and commercial viability of small to medium scale renewable energy systems, either in grid connected or stand alone format. The objective of this component is to mitigate technical and information barriers through the installation of demonstration projects and deliver GHG emission reductions as well as financial barriers through the creation of a dedicated seed fund (with contributions from ECREEE's ECOWAS Renewable Energy Facility (EREF) and GEF) to provide co-funding to support the development of small to medium scale renewable energy projects which will generate added emission reductions. The component will also generate national case studies and best practices on small to medium scale renewable energy projects that would be relevant to and have good replication potential in Cape Verde. The projects will create best practice examples for the country for further dissemination and to help raise awareness through the identification and installation of small to medium scale renewable energy pilot projects. This component will also help develop the market and increase confidence for small to medium scale renewable energy. In the case of the UNIDO/GEF project, only part of EREF that is ring-fenced to Cape Verde will be contributed to the Seed Fund.

The ECOWAS Renewable Energy Facility (EREF) for rural and peri-urban areas launched in May 2011, managed by the ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE), provides grants for small and medium sized renewable energy and energy efficiency (RE&EE) projects and businesses in rural and peri-urban areas of West Africa. The Project Management Office (PMO) of this UNIDO-GEF project will be hosted by ECREEE and ECREEE through EREF will provide co-finance for the establishment of the dedicated seed-fund for the replication of the demonstration projects.

The following diagram illustrates the relations of the GEF funding and EREF with the outputs expected in this component.

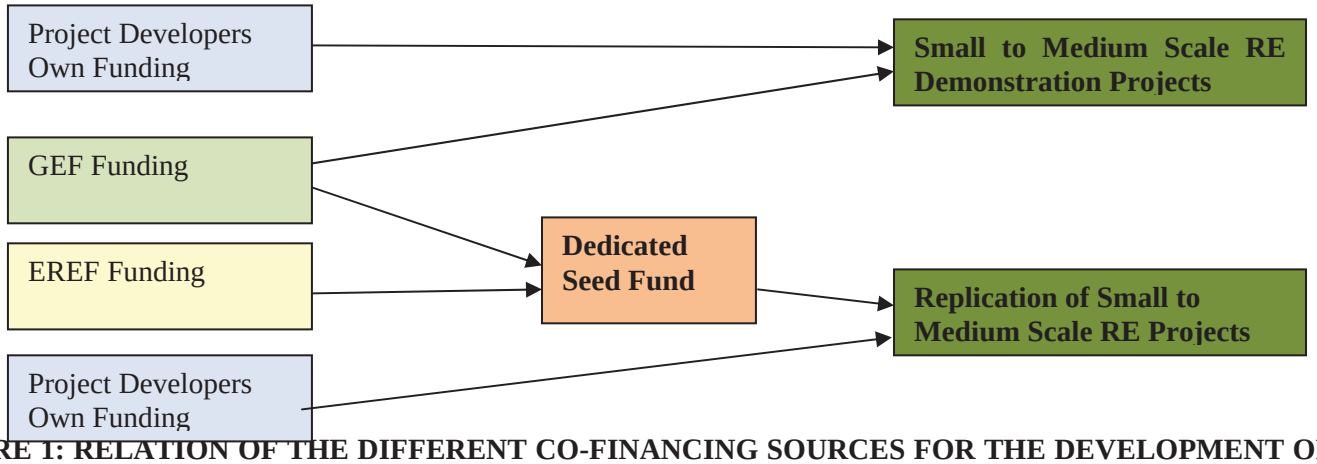

FIGURE 1: RELATION OF THE DIFFERENT CO-FINANCING SOURCES FOR THE DEVELOPMENT OF DEMONSTRATION PROJECT AND FOR THEIR REPLICATION IN CAPE VERDE

Project Component 2 (PC2) aims to address financial barriers for further small to medium scale renewable energy projects in Cape Verde. This aim will be achieved through two activities, firstly through the preparation of a national investment strategy and business plan for scaling up or replicating small to medium scale renewable energy demonstration projects. Secondly through the development of the study on how Brava Island can run on 100% RE electricity, in which more small to medium scale renewable energy projects will be identified.

Project Component 3 (PC3) aims to strengthen the regulatory framework to effectively promote and support small to medium scale renewable energy development into economic and social sectors. This component will review the current regulations concerning the installation of small to medium scale renewable energy projects and identify barriers to small to medium renewable energy projects and will present to the Government of Cape Verde and Agência de Regulação Económica (ARE) a series of recommendations on any revisions or additions need to the current regulatory framework to help overcome any regulatory barriers to the development of small to medium scale renewable energy projects.

Project Component 4 (PC4) primarily focuses on strengthening the institutional capacity as well as addressing the insufficient technical capacity within market enablers and market players (especially entrepreneurs, banks etc) to identify, develop and implement small to medium scale renewable energy projects. This component aims to build and strengthen technical capacity with respect to small to medium scale renewable energy at the institutional, market and enterprises levels through both a "train-the-trainers" approach and direct training.

The final project component comprises the project management (PC5) which includes the establishment of a Project Management Office (PMO), providing training to PMO staff on project implementation and other related matters as well as establishing a dedicated website for the project.

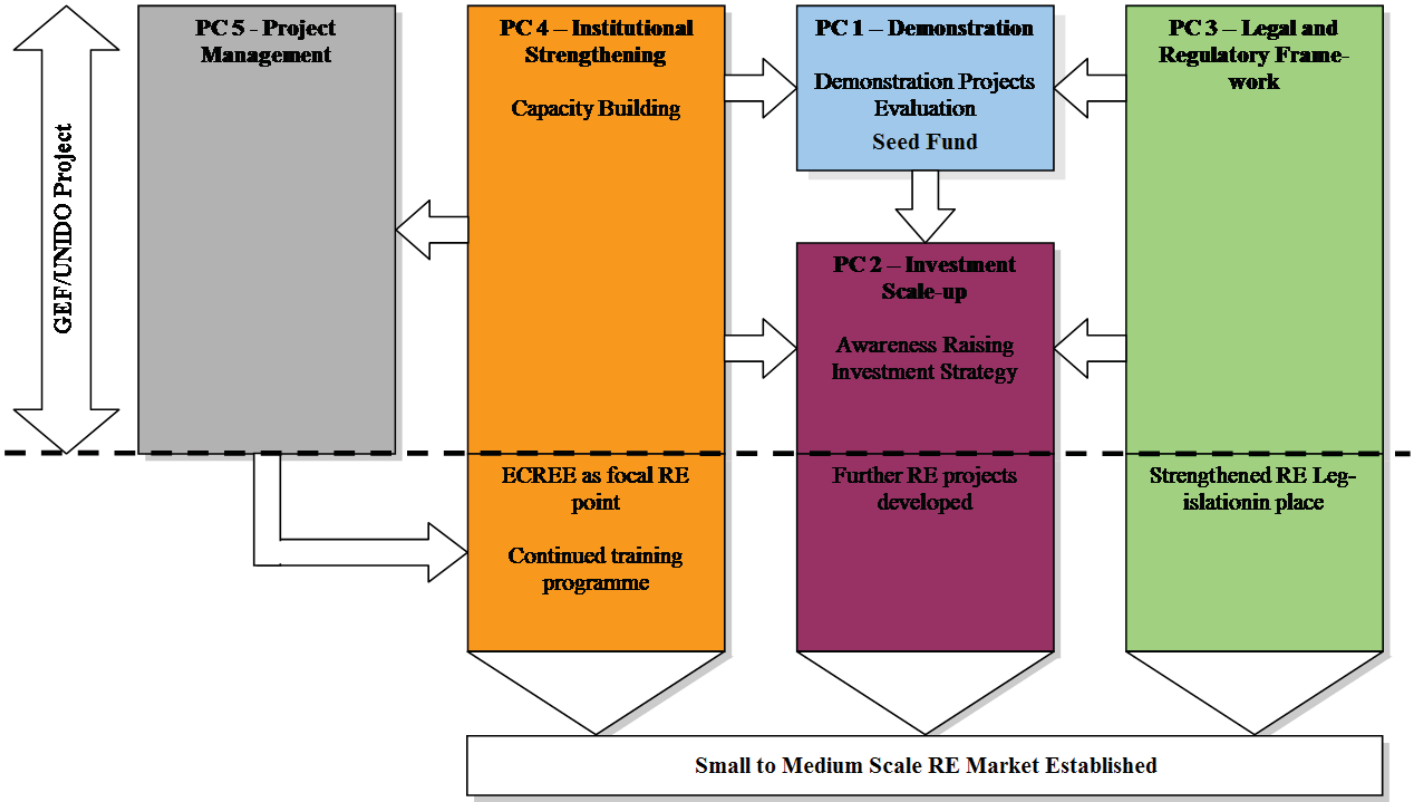

FIGURE 2: PROJECT COMPONENTS

Below further details about the expected outputs and outcomes of the project components are provided:.