**Mid-Term Evaluation of the UNDP/GEF project:**

***“Removal of Barriers to Solar PV Power Generation in Mauritius, Rodrigues and the Outer Islands”***

*(PIMS 4333), GEF Project ID 4099*

**Report**

**Submitted to UNDP Mauritius**

Region and countries included in the project: Mauritius, Africa

GEF Operational Focal Area: Climate Change (CC-4)

Strategic Program: / SP3 Promoting Market Approaches to Renewable Energy

Executing Agency/Implementing Partner: Ministry of Energy and Public Utility / Central Electricity Board

Project period evaluated: October 2011 to March 2015

**May 2015**

**Evaluation Team:**

|  |  |
| --- | --- |
| **Dinesh Aggarwal - International Consultant (Team Leader)****Madoo Desha – National Consultant**  |  |

Disclaimer

*Please note that the analysis and recommendations of this report do not necessarily reflect the views of the United Nations Development Programme, its Executive Board or the United Nations Member States. This publication reflects the views of its authors.*

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APR Annual Performance Report

AWP Annual Work Plan

CEB Central Electricity Board

CEO Chief Executive Officer

EU European Union

EDF Electricite de France

FIRR Financial Internal Rate of Return

FIT Feed in Tariff

FSP Full Size Project

GCF Green Climate Fund

GEF Global Environment Facility

GDP Gross Domestic Product

GHG Greenhouse gases

IAs Implementing Agencies

IEC International Electrotechnical Commission

IPP Independent Power Producers

IW Inception workshop

MOESD Ministry of Environment and Sustainable Development, Disaster and Beach Management

MEPU Ministry of Energy and Public Utilities

MOFED Ministry of Finance and Economic Development

MID Maurice Ile Durable

M&E Monitoring and Evaluation

MMS Mauritius Meteorological Services

MRC Mauritius Research Council

MRs Mauritius Rupees

MSB Mauritius Standards Bureau

MSDG Medium Scale Distributed Generation

MTE Mid-Term Evaluation

NGO Non-governmental Organization

NPD National Project Director

OIDC Outer Islands Development Corporation

PIF Project Information Form

PIR Project Implementation Report

PIU Project implementation unit

PM Project Manager

PPA Power Purchase Agreement

PV Photo Voltaic

RCU UNDP/GEF Regional Coordinating Unit

RE Renewable Energy

RRA Rodrigues Regional Assembly

SC Steering Committee

SMART Specific, Measurable, Attainable, Relevant, Time-bound

SSDG Small Scale Distributed Generation

Tbd To be determined

ToE Tons of oil equivalent

ToR Terms of reference

UNDP United Nations Development Programme

UNDP-CO United Nations Development Programme - Country Office

VAT Value Added Tax

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# EXECUTIVE SUMMARY

Table 1: Project Information Table

|  |  |
| --- | --- |
| **Project Title:**  | **Removal of Barriers to Solar PV Power Generation in Mauritius, Rodrigues and the Outer Islands** |
| **GEF Project ID:** | 4099 |  | *Committed at endorsement (USD Million)* | *Realized co-financing / spent GEF budget at midterm evaluation (USD Millions)* |
| **UNDP Project ID:** | 4333 | ***GEF financing:***  | **2.005** | **0.599** |
| **Country:** | Mauritius | ***IA/EA own:*** | **0.050** | **Nil** |
| **Region:** |  | ***Government:*** | **1.438** | **0.649** |
| **Focal Area:** | Climate Change (CC-4 Promote on-grid electricity from renewable sources) | ***Others (private):*** | **17.500** | **0.150** |
| **FA Objectives, (OP/SP):** | SP3 Promoting Market Approaches to Renewable Energy | ***Total co-financing:*** | **18.988** | **0.799** |
| **Executing Agency:** | Ministry of Energy and Public Utilities / Central Electricity Board | ***Total Project Cost:*** | **20.993** | **1.398** |
| **Other Partners involved:** | Rodrigues Regional AssemblyOuter Islands Development Corporation | ***GEF endorsement:***  | ***October 2011*** | **ProDoc Signature: October 2011**  |
| ***(Operational) Closing Date:*** | **September 2015** |  |

## Introduction and brief description of the project

Mauritius is highly dependent on imported fossil fuels for electricity generation. In the year 2009, 79% of the electricity generation in Mauritius were from fuel oil and coal, and the balance of the power was generated from renewable sources, that included hydro (5%) and bagasse (16%). In the “Long Term Energy Strategy 2009-2025” policy document, the government of Mauritius decided to increase the renewable energy share to 35% by 2025 , in order to increase access to modern energy services, and to enhance energy security. Grid-connected PV for electricity generation was identified as one of the viable components of the planned renewable energy mix. Accordingly, the “Long Term Energy Strategy 2009-2025” establishes targets for PV electricity generation at 1% by 2015, and 2% by 2025. However, there was an absence of appropriate regulatory, technical and market conditions in order to promote the implementation and operation of grid-connected PV projects.

This project aims at removing the barriers towards private sector investment in grid connected solar PV, and establishing 3MW of grid connected solar PV. Emission reduction of about 5,318 tons CO2/ Yr. are expected, after the end of the project, throughout the remaining life time of the solar PV facilities that would have been set up. The project will create favourable regulatory framework that will facilitate private sector participation in supplying the national grid with PV-generated electricity at market-determined prices and assist the Government in closing private sector funded PV investments. Due to creation of conducive and enabling environment there will be further capacity addition for Solar PV grid connected power generation leading to reduction in the emission of GHG. It is envisaged that this project will enable Mauritius to meet its target of 2% of electricity generation from on-grid PV by 2025. Table 2 provides details of the projected outcome and outputs of the project. Actual implementation of the project could be started only after about 30 months after signing of the project documents due to administrative reasons. In order to account for the actual situation at the time of implementation of the project, adjustments were made in the baseline, targets and outputs of the project.

**Table 2: Summary of components and outcomes (as per Project Document)**

| **Component / Outcomes** | **Output** | **Baseline** | **Target** | **Indicator** |
| --- | --- | --- | --- | --- |
| **Project Objective**: To assist the Government in addressing the barriers with a view to promoting PV grid-connected electricity generation.  |  | GHG in the electricity generation sector scheduled to increase from 2.03 million tons/year (2008 figures) to almost 3.3 million tons/year by the year 2020.Negligible investments taking place in on-grid PV electricity generation. | 11,662 2 MWh of electricity generated (as a result of the 3 MW capacity brought on-line) by project completion[[1]](#footnote-1). Direct reduction of 13,295 tons of CO2 over the 4-year FSP project life cycle and 98,400 over the full lifetime of the plants.Estimated cumulative indirect GHG emission reduction of at least 350,000 tons of CO2eq by 2025 on the basis of a conservative policy scenario and a GEF causality factor of 80%. | Direct investment in at least 3 MW of on-grid PV installations by end of project. Amount of reduced CO2 emissions compared to the projected baseline |
| **Component / Outcome 1:** Streamlined and comprehensive market-oriented energy policy and legal/regulatory framework to promote PV grid-connected electricity generation. Power Purchase agreements formulated and signed by selected investors |  | None available at the present time.  | To be completed within 15 months of project initiation and approved by Government one and a half years after start of project | Framework finalized and available for consultation by potential investors.Standardised PPAs formulated and the SSDG scheme reviewed |
|  | **Output 1.1:** Report streamlining market-oriented energy policy and legal/regulatory framework to regulate on-grid PV electricity generation. | Potentially overlapping responsibilities of various Government institutions make the decision process quite cumbersome and complicated. | To be completed within 15 months of project initiation and approved by the Government 1.5 after start of project | Report confirming that policy and framework arrangements are in place. |
|  | **Output 1.2:** Strategy document aimed at sharpening the focus of the respective roles and responsibilities of MEPU and CEB for on-grid PV. | Not available at the present time. | To be completed within 15 months of project initiation and approved by the Government 1.5 years after start of project  | Document available and procedures in place. |
|  | **Output 1.3:** Criteria and procedures for the introduction of a transparent process in the selection/award of projects for development. | Not available at the present time.  | To be completed within 15 months of project initiation and approved by the Government 1.5 years after start of project Competitive selection/award of projects completed by the end of 1.5 years after project start. | Guidelines available and put into practice. |
|  | **Output 1.4:** One-stop shop for issuance of construction licenses and permits to developers. | Under the business-as-usual scenario, the average time to secure all required construction licenses and permits can take up to 12 months. | All construction licenses and permits are issued following completion of feasibility studies and selection of promoters | One-stop shop is operational.Information brochure and website are available. |
|  | **Output 1.5** Review of the SSDG scheme including financial model, technical specifications towards improving the scheme and moving to the next phase | Not available at the present time. SSDG scheme expected to be over by end of 2011 | To be completed within 18 months of project initiation and applied by Government thereafter | Document available on the results achieved by the scheme and options for improvement suggested for next phase |
|  | **Output 1.6:** Standardised and signed Power Purchase Agreements with identified developers/investors  | Not presently available. | Completed within 15 months of project start. | Power Purchase agreements signed.  |
| **Component / Outcome 2:** Capacity available within MEPU and other key Government/Financial Institutions to evaluate the economic and financial viability of grid-connected PV systems and to formulate incentives to attract investors.  |  | None available at the present time. | At least 2 projects evaluated by the end of year 2.Ten staff trained during first 15 months of project. |  Number of staff who participated in and successfully completed capacity development programme. |
|  | **Output 2.1:** Suitable methodology for the economic/financial evaluation of on-grid PV systems. | Not available at the present time. | To be completed within 15 months of project initiation and applied by Government thereafter. | Methodology applied by entities on large scale PV projects |
|  | **Output 2.2:** Standard financial evaluation methodology for calculating feed-in tariffs for investors with installed capacities more than 50 kW. | No such evaluation methodology available. | To be completed within 15 months of project initiation and applied by Government thereafter. | Methodology applied by MEPU and used in PPAs |
|  | **Output 2.3:** Financial and other incentives to be provided to project developers. Ownership model and investment scheme created | No comprehensive document available at the present time. | To be completed within 15 months of project initiation and applied by Government thereafter. | Document available and incentives operationalised. Financially sustainable mechanisms developed to support Feed in Tariffs |
|  | **Output 2.4:** Capacity developed withinfinancial institutions to appraise PV projects for lending. Risk mitigation instruments developed to protect lenders and developers. | None available at the present time. | Five to six financial institutions staff trained during first15 months of project.Risk mitigation instruments developed during first 15 months of project. | Number of financial institutions staff successfully trained.Risk mitigation instruments developed and operationalised. |
|  | **Output 2.5:** Carbon finance potential developed regarding future on-grid PV investments outside of the project framework. | None available at the present time. | To be completed within 15 months of project initiation. | Options assessed and potential developed to access carbon finance in future investments. |
| **Component / Outcome 3:** Capacity available to upgrade existing solar radiation data, expand geographical coverage for solar resource measurement, formulate solar map technical guidelines and standards for and provide oversight, monitoring and certification of PV systems, and provide installation, operation, maintenance and repair services. Necessary technology transfer models formulated and operationalised |  | No such activity being implemented. | 15 sites targeted for enhanced solar radiation assessment in year 1.Published guidelines and technical standards within 15 months of project start.Manual for installation, operation, maintenance and repair services developed by year 1.5, 40 people trained in the various categories by the end of the project. | Teams trained in various categories of activities. Guidelines and technical standards for on-grid PV systems. Technology delivery models put in place |
|  | **Output 3.1:** Programme for upgrading existing solar radiation data, expand geographical coverage for solar resource measurement.Publication of a solar Map for Mauritius, Rodrigues and the Outer Islands | Presently available solar radiation data insufficient to accurately design on-grid PV systems... | Upgrade/expand coverage to 15 sites completed by the end of project.Four Meteorological Services staff trained within first 15 months of project. | Instrumentation to measure solar radiation data installed.Software developed for interpretation of data.Solar map developed and published |
|  | **Output 3.2:** Guidelines and technical standards for PV system components and grid-connected PV systems. | Not presently available. | Completed within first 18 months of project. Applied to sites identified for development. | Guidelines and standards published and operationalised. |
|  | **Output 3.3:** Capacity developed within MEPU/CEB to determine grid absorption capacity and provide oversight, monitoring and certification of on-grid PV systems. | Not presently available. | Six MEPU/CEB staff trained during first 18 months of project. | Capacity development plan formulated and implemented. |
|  | **Output 3.4:** Local capacity for installation, operation, maintenance and repair services. | None available now. | 30 people trained by the end of the project. | Availability of qualified and certified companies/individuals for installation, operation, maintenance and repair services. |
|  | **Output 3.5:** Technology transfer opportunities identified, and delivery models formulated and operationalised. | None at the present time. | Completed within 2 years of project start. | Report confirming that technology delivery models are being implemented.  |
| **Component / Outcome 4:** Promoters assisted financially through Feed in Tariffs and projects implemented and supplying electricity to the CEB grid |  | Not presently available. | Construction of at least 3 MW of on-grid PV systems completed by the end of the project.  | Funding used for toping part price differential in Feed in tariffs for a determined timed |
| **Component / Outcome 5:** Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the country.  |  | Lack of sufficient information to pursue programme. | Increased awareness among stakeholders in place to promote and develop the market for on-grid PV | Outreach programme formulated. Project experience compiled, analysed and disseminated. |
|  | **Output 5.1:** Plan to implement outreach/promotional activities targeting domestic (and international) investors. | No such plan available. | Completed within 10 months of project initiation. | Plan available and operationalised. |
|  | **Output 5.2:** Capacity development of MEPU to monitor and document project experience. | No capacity development programme. | 10 Government staff trained by the end of project. | Capacity development material prepared. |
|  | **Output 5.3:** Published materials on project experience/best practices and lessons learned. | Lack of information on best practices and lessons learned. | Completed within 3 months of project end. | Project experience and best practices compiled, published and available on website. |

## MTE Ratings & Achievement Summary Table

Following Table provides a summary of the ratings for;

a) Progress towards results

b) Project Objectives

c) Implementation and Adaptive Management and

d) Sustainability.

**Table 3: Mid-term evaluation ratings and achievements summary**

| **Main criteria** | **Rating[[2]](#footnote-2)** | **Explanation** |
| --- | --- | --- |
| **Project Strategy** | **NA** | The objective of the project is to increase the uptake of solar PV at Mauritius. The strategy of the project is centred on removing the technical, regulatory and financial barriers. The strategy has five different components, with each of the component targeted specifically at a set of barriers. The underlying assumption that the removal of barriers will lead to higher uptake of solar PV has proven to be correct when seen in the present day context. The project is in line with the priorities of the country for the power sector. One of the objectives of the project is reduction in emissions of GHG, is in line with the stated position of Mauritius on the issue of climate change. Although the project is targeted at Solar PV, the outcomes will also benefit other renewable sources of energy. |
| **Progress towards results** |  | Indicator wise, the project has significantly overachieved. However, it is considered that the indicator used (creation of solar PV capacity under the project) does not adequately represent removal of barrier. At the MTE, PPAs for 10 MW solar PV capacities are in place (against the target of 3 MW). However rating for achievement of project objectives has been made considering the progress towards achievement (and the ratings) for different Outputs of the projects.  |
| **Project Objective** | **MS** |
| **- Outcome 1** | **MS** | This outcome largely pertains to creation of regulatory framework to create transparency, easy and speedy consulting approval processes etc. Achievements against this Outcome have been largely due to the pro-active approach of CEB (to engage with private sector PV operators and with WB for consulting on MSDG) in the absence of any planned activities under the project for quite some time. Considering that some of the Outputs are not on track and unlikely to be achieved during the project implementation timelines, progress towards achievement has been rated as Moderately Satisfactory.  |
| **- Outcome 2** | **S** | This Outcome addresses the financial barriers through capacity building of financial institutions / key government officials to appraise investment propositions and formulate incentives to attract investors.During the period of initial delay, CEBs followed a pro-active approach and engaged a consultant to carry out the assignment on MSDG. This helped towards achieving some of the outputs set against this Outcome. For other outputs a RFP has been issued to appoint a consultant. The likely completion date of this consulting assignment is July 2015. The outcomes of this component have been achieved or are on track to be achieved during rest of the implementation period. |
| **- Outcome 3** | **MS** | This component / Outcome is targeted at removal of technical barriers by developing the energy resource mapping, facilitating technology transfer, creation of technical standards for PV and grid connection systems, and capacity building.No specific activities have been carried and activities are planned during rest of the project implementation period. However, two of the outputs of this component were achieved as a part of study on MSDG led by WB and partially supported by this project. RFP has been prepared to award consulting for resource assessment and preparation of solar maps.  |
| **- Outcome 4** | **S** | This component targets investment barriers (financial barriers) by providing feed in tariff support to demonstration projects, and also barriers such as lack of awareness and technology.The progress against this Outcome is satisfactory as PPAs have been signed with promoters of solar PV facilities aggregating to capacity of 10 MW (against target of 3MW in the project document) |
| **- Outcome 5** | **MS** | This component is targeted at the barrier of lack of awareness. It also is intended to multiply the benefits of the project by dissemination of the project experience / best practices etc.Due to priority to implement other components of the project to make up for initial delay, no work has been carried out for this component till the time of MTE. However, activities are now planned and scheduled during rest of the of project implementation period.  |
| **Implementation and adaptive management** | **MS** | As and when needed, project team has responded to changing conditions and risks, to take advantage of opportunities for partnerships and actions that support the overall project objective. One of the issues with the work planning is that the activities have not been planned for each of the outcomes and output.Quarterly progress reports and the annual progress reports are prepared and shared in accordance with UNDP / GEF requirements. The quarterly reports however do not report the details of the tasks carried out during the reporting period.Communication is one of the aspects of the project management which is clearly lacking. There are no formal or informal communication channels in place for internal or external communicationsQuarterly progress reports and annual progress reports are prepared as per the M&E plan and were made available during the MTE. The monitoring reports do not cover the co-financing aspectsStakeholder engagement is one of the weak areas, and the only formal platform for engaging the stakeholders is the steering committee.Budget utilization and co-financing of the project are lacking but are likely to be made up during the remaining implementation period. |
| **Sustainability** | **L** | The solar PV projects being supported under the projects are likely to continue receiving the feed in tariff support for their life time as PPAs have been signed and budget allocations have been made by the government. No political, social economic or environment risks are envisaged for the project |

## Summary of conclusions

The achievements of the project till the time of MTE is largely attributable to the pro-active actions by CEB to engage with private sector towards creation of grid connected solar PV facilities and the consulting assignment to Mercados for MSDG. The project has been instrumental in the establishment of grid connected solar PV technology based power generation facilities at Mauritius. The project has been able to create capacity of about 10 MW, which is the target capacity by 2025 for solar PV as per the strategy of the government. This became possible as the project supported the difference in tariff between the fossil fuel based power plants and the cost of procurement of power from solar PV plants.

Although the cost of power generation using solar PV technology has come down (due to general trend of reduction in the capital cost of solar PV and fiscal measures by the government like reduction in VAT, no land use conversion charges etc.) there is still a difference in the cost of generation using solar PV technology and other fossil fuel based technologies., In view of this gap, any further capacity addition would still require the feed in tariff support or other matching fiscal incentives.

The project was intended to remove a number of legal, regulatory and market barriers which hamper realization of the potential of solar PV energy for on-grid electricity generation. The project has succeeded to do so partially. Some barriers of technology (availability of solar resource data), financial (need to support by fiscal incentives due to viability gap), regulatory (long time required to get clearances) still remain. Some of the remaining barriers will get addressed during the remaining implementation period. However, in order to achieve the planned objectives, outputs and outcomes of the project, an extension of time would be required. We conclude that the project has been instrumental in lowering many of the barriers

## Recommendations

1. *Time Extension till end of 2016 to complete project*

There was delay of about two and half years in the start of the project. Due to this reason most of the outcomes and outputs of the project will not be achieved by the scheduled end of the project in September 2015. This is despite significant progress has already been made towards achievement of results. Notable results which can be achieved during the recommended extension of time is creation of ‘Solar Map’, operationalisation of solar PV facilities being supported under the project, disbursement and monitoring of utilization of funds for feed in tariff support provided to the beneficiaries, formalisation of regulations based on the recommendations of the consultants etc.

1. *Recruitment of a full time Project Assistant, to provide support to accelerate implementation of the project.*

Start of the project was delayed due to persistent failure to recruit a project manager by MEPU. Presently project management has been entrusted to full time staff members of CEB, who maintain their regular job responsibilities. Due to lack of dedicated man-power some of the project management activities such as preparation of work plans, co-ordination, stakeholder consultations etc. at times take a back seat. It is recommended that UNDP recruits a project assistant to provide dedicated support to the project team.

1. *Easier environmental clearance procedures for solar PV plant projects*

Current regulations require Solar PV projects to undergo a complete EIA, in order to obtain a formal environment clearance, which is quite time consuming. It is recommended that an outcome be added to examine the possibility of having faster environment clearance procedures (without compromising environment integrity). One possibility which may be examined in this regard is to have recourse to a PER (Preliminary Environmental Review) instead of a full EIA.

1. *Initiate activities related to outreach and communication*

Outreach, information dissemination, communications and awareness creation activities have not yet been taken up yet. Considering that such activities have a multiplier effect towards achievement of the objectives and the results, it is recommended that dedicated efforts be made towards this component (Output 5) of the project.

1. *Follow up activities for acceptance of recommendation of consultants for regulations*

Consultants were appointed to suggest policy, legal and regulatory measures for solar PV sector. As the consultants have submitted their report, the work progress reports show the activities of regulatory measures as completed. It needs to be appreciated that the indicators on achievement were not completion of studies, but regulations in place. The SC should follow up regularly with Government on the recommendations by the consultants to ensure issuance of the required regulatory measures. Till the time such regulations are in place these corresponding outcomes and activities should not be shown as completed.

1. *Monitor and report of co-financing*

Presently there is no mechanism to monitor record and report co-financing to the project. It is recommended that procedures be developed for project management to monitor record and regularly report co-financing to the project.

1. *Organize Capacity building for private sector and financial personnel.*

To promote private sector investment, awareness creation, capacity building, training of private sector personnel plays an important role. Applying such measures to the lending institutions has multiplier impact. It is recommended that officials of the private sector and financial institutions be closely involved while creating awareness and capacity building.

1. *Technical training for grid connectivity at higher voltage*

Under the SSDG program run by the government prior to this project, training courses were carried out to ensure availability of trained manpower. However, small scale PV systems are connected to the grid at lower voltage. As medium scale and large scale solar PV would need to be connected to the grid at higher voltage, it is recommended that appropriate training courses be organized in this field.

1. *Solar Resource Mapping*

Deployment of Pyranometers at different locations to collect data and subsequent preparation of the solar map is a time consuming process. In order to optimally utilize the available resources and time it is recommended that the possibilities of collaborating with University of Mauritius (while preparing RFP for Outcome 3.1) be explored. While interacting with the University of Mauritius personnel during the mission, it was leant that the University is already carrying out relevant research work on the assessment of solar resources.

1. *Explore Green Climate Fund to provide fiscal incentives to future PV installations*

In the foreseeable future, the cost of generation of electricity, using solar PV technology is unlikely to be at par with the cost of generation with other fossil fuel technologies. Thus, it would be necessary to continue to provide fiscal incentives for future PV installations as well. Such incentives may be provided as feed in tariff support or through other fiscal measures (grants, subsidies, interest rate draw down support etc.). It is recommended that possibilities to obtain financial support for such measures from the ‘Green Climate Fund’ be explored.

# introduction

## Purpose of the Mid Term Evaluation and Objectives

The objective of the mid-term evaluation (MTE)is to assess progress towards achievement of the project objectives and outcomes as specified in the Project Document. It is also meant to evaluate early signs of project success or failure with the goal of identifying required changes that should be made in order to set the project on-track so that the intended results are achieved. The MTE has been carried out in compliance with the monitoring and evaluation plan as elaborated in the project document, and in line with GEF / UNDP policies.

## Scope and methodology

The design of the MTE was based on the requirements, as set out in the ToR prepared by the UNDP CO (please see Annex A). Before undertaking the MTE, an Inception Report was presented, including the proposed tasks, activities and deliverables, as well as a table of main evaluation questions that need to be answered to determine and assess project results, and to identify where the information is expected to come from (e.g. documents, interviews and field visits). The evaluation efforts have been focused on the following four categories of project progress;

* Project Strategy
* Progress towards results
* Project implementation and adaptive management
* Sustainability

The Table of mid-term evaluation criteria and questions is presented in Annex B.

Sources of data and data collection

Data have been collected through an extensive desk review of all relevant documents, meetings and interviews with key stakeholders and site visits to answer the MTE evaluation questions. The sources of data were carefully identified, in order to obtain useful evidence-based information that is credible and reliable.

* A Desk review of the following documents was carried out (see Annex C):
	+ Progress reports and project documents; such as the UNDP Project Document (ProDoc), GEF CEO Endorsement Request, Baseline GEF Tracking Tool, Project Inception Report
	+ Project Monitoring documents, namely the Annual UNDP/GEF Project Implementation Reviews (PIRs); Minutes of the Steering Committee meetings, Quarterly Project Reports, Quarterly Work Plans, Financial reports
	+ Project Outcome documents; consultancy reports generated through Project activities, TORs and RFPs prepared by Project team,
	+ Background info (websites, reports, national policy papers, national budget speech, or other written info) from relevant government ministries and institutions, as well as other stakeholders; background info on technology and application of solar PV; technical reports; project manuals and guidelines
* Mission: Prior to the mission visit to Mauritius, stakeholders were contacted to schedule meetings and site visit in an optimum way in order to meet with a maximum of relevant stakeholders. During the mission, interviews were held with the Project Team, UNDP CO, and a wide range of identified stakeholders, beneficiaries and key informants which included Project Board members, senior officials of various ministries, academia, local government, and suppliers of solar PV, independent power producers, and international development agencies. The mission was carried out during the period 13 to 21 April 2015, and included a one day visit to Rodrigues. The mission schedule is given in Annex D.

The review of documents provides the basic facts and information for developing a first draft mid-term evaluation (MTE) report, while the mission is needed to verify the basic facts, get missing data and to learn opinions of respondents to help interpret the facts. The individual interviews with key informants were based on open discussion to allow respondents express what they feel as main issues, followed by more specific questions on the issues mentioned. The list of mid-term evaluation questions of Annex B was used as a checklist to raise relevant questions and issues during the interviews that correspond to the level and type of involvement of the interviewee or the organization visited.

Regarding the data analysis and methods for analysis, the documents listed in Annex C were reviewed and analysed. The notes of the interviews with key informants were used to verify facts and information presented in reports and documents and helped to formulate the conclusions and recommendations. A seven-day mission has the limitation of potentially giving a snapshot impression only. Nonetheless, the mid-term reviewers feel that this mix of data collection and analysis tools has yielded viable answers to the evaluation/review questions within the limits of budget resources for the review and time availability.

This review has been conducted in accordance with the principles outlined in the United Nations Evaluation Group ‘Ethical Guidelines for Evaluation’ (see Annex G).

## Structure of the mid-term evaluation report

The evaluation has been undertaken in accordance with the UNDP guidelines on mid-term reviews (UNDP, 2014)[[3]](#footnote-3) as well as general criteria of UNDP evaluations. This report is structured according to the Table of contents that is given in Annex B of the MTR guidelines (UNDP, 2014), and the Terms of Reference issued by UNDP Country Office.

 Chapter 1 contains the Executive Summary, while Chapter 2 provides an Introduction to the project and Chapter 3 covers the Project Description and background context. Due to the size of the text, the main Findings are reported in four separate chapters: Project Strategy in Chapter 4, Progress towards results in Chapter 5, Project Implementation in Chapter 6 and Sustainability in Chapter 7. The Conclusions and Recommendations are stated in Chapter 8, and a number of key documents are included in the annexes.

For easy and ready reference, Annex B shows where the main evaluation criteria and questions of the MTE can be located in different sections of the report.

# Project description and context

##

## Development context; problems that the project sought to address

The Republic of Mauritius (Mauritius) comprises of the island of Mauritius, islands of Cargados Carajos, Rodrigues and the Agalega Islands. The main islands of Mauritius and Rodrigues are fully grid connected, and in the year 2009 Mauritius Island had an installed capacity of 442 MW, while Rodrigues had an installed capacity of 11.5 MW. There is no electric utility on the Island of Agalega where the 300 inhabitants are supplied with electrical power using small diesel generators operating in 3 isolated mini-grids under the responsibility of the Outer Islands Development Corporation. Electricity generation is dependent on fossil fuels with 79% of the electricity generation in Mauritius being from fuel oil and coal in the year 2009. The balance of the power generated from renewable sources includes hydro (5%) and bagasse (16%).

With the continued increase in the prices of fossil fuels over the years, the Government decided to consider renewable energy sources. In line with the above, the Government adopted an “Outline of the Energy Policy 2007-2025” in April 2007 and formulated the, “Long Term Energy Strategy 2009-2025” in December 2008. The strategy framework covers all sectors, including electricity generation, transportation, petroleum products, renewable energy and energy efficiency. In the renewable energy sector, the thrust is on the promotion of technologies, with a focus on distributed and decentralised systems, to increase access to modern energy services, and to enhance energy security as well. In this context, the challenge under the “Long Term Energy Strategy 2009-2025” is to increase the renewable energy share to 35% by 2025. To achieve this objective, the Government has determined grid-connected PV for electricity generation as one of the viable components that would enter into a renewable energy mix. Accordingly, the “Long Term Energy Strategy 2009-2025” establishes targets for PV electricity generation at 1% by 2015, and 2% by 2025.

According to available data from the Mauritius Meteorological Services (MMS), Mauritius, Rodrigues and Agalega enjoy a favourable solar climate with some 2,000 – 2,250 hours of sunshine annually and an average solar radiation of 5.4 kWh /m2 /day. However, the country has only limited experience with grid-connected PV electricity generation. As per the “Long Term Energy Strategy 2009-2025”, the target for grid-connected PV is approximately 8-10 MW and this could be exceeded if private sector interest can be sustained. However, required regulatory, technical and market conditions are absent to enable implementation and operation of grid-connected PV projects.

The project aims at removing the barriers towards private sector investment in grid connected solar PV.

A number of barriers were identified at project design stage, in the regulatory, financial, institutional and technology fields, including lack of data and information for potential investors. The project seeks to create an appropriate regulatory framework, and to remove barriers to promote PV grid-connected electricity generation. More details about the barriers and the relevant outputs to address them are given in Table 4 below.

**Table 4: Summary of barriers and mitigation strategies**

| **Barrier** | **Situation at the time of project design** | **Strategy for addressing barrier at project design** |
| --- | --- | --- |
| Institutional | * Potential overlapping of responsibilities between MEPU and CEB.
* Insufficient human resource capacity to perform effectively
 | * Review of structures of both entities and sharpen the focus of their appropriate roles and staffing requirements.
* Formulate and implement capacity strengthening programme to address specific barriers
 |
| Regulatory | * Absence of consolidated set of regulations governing on-grid PV.
* Absence of transparent procedures for selection of projects.
 | * Develop a compendium of regulations related to on-grid PV development.
* Design and implement transparent procedures for selection of projects.
* Set up one-stop shop to speed up issuance of construction licenses and permits.
 |
| Financial | * Absence of feed-in tariffs for capacities above 50 KW.
* Non-existence of financial incentives and risk-mitigation instruments.
* Lack of financial support in terms of Feed in Tariffs for large-scale systems to catalyse market
 | * Review of SSDG scheme
* Design and implement market-oriented tariff structure.
* Design and implement financial incentives and risk-mitigation instruments.
* Development of a sustainable financial mechanism for FITs.
* Develop carbon finance potential for future PV investments.
* Provision of financial assistance to top up price differential for Feed in Tariffs
 |
| Technology | * Lack of sufficient knowledge on latest developments in on-grid PV system design and construction.
* Absence of guidelines and technical standards for on-grid PV.
* Scarcity of experienced PV system designers, installers and maintenance personnel.
 | * Bring local staff up to date with latest developments in on-grid PV system design and construction.
* Formulate guidelines and technical standards for on-grid PV system components and installations.
* Technology transfer delivery models put in place
* Formulate and implement capacity development programme for equipment designers, installers and maintenance personnel.
 |

## Description of the project: objective, outcomes and outputs

Table 5 summarizes how the project’s main outputs/activities address the barriers. The indicators for each outcome and output are also given in Table 5. The Table also provides the details of the adjustment / corrections made in the log frame and the baseline at the time of project inception to account for the situation at that point of time (implementation of the project could start only after about 30 months from the date of signing of project document).

**Table 5: Summary of and outcomes (as per Pro Doc) and Updates (as per inception report)**

| **Component / Outcomes** | **Output** | **Baseline** | **Target** | **Indicator** | **Updated Baseline** | **Updated Target** |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Objective:** To assist the Government in addressing the barriers with a view to promoting PV grid-connected electricity generation.  |  | GHG in the electricity generation sector scheduled to increase from 2.03 million tons/year (2008 figures) to almost 3.3 million tons/year by the year 2020.Negligible investments taking place in on-grid PV electricity generation. | 11,662 MWh of electricity generated (as a result of the 3 MW capacity brought on-line) by project completion[[4]](#footnote-4). Direct reduction of 13,295 tons of CO2 over the 4-year FSP project life cycle and 98,400 over the full lifetime of the plants.Estimated cumulative indirect GHG emission reduction of at least 350,000 tons of CO2eq by 2025 on the basis of a conservative policy scenario and a GEF causality factor of 80%. | Direct investment in at least 3 MW of on-grid PV installations by end of project. Amount of reduced CO2 emissions compared to the projected baseline | Investment in the PV sector are taking place and 5 solar PV plants of capacity 2 MW each will be set up by 2015, subject to Power Purchase Agreements being singed | Assuming that the 10 MW start to produce electricity from 2015 and 1500 hours of sunlight. It is anticipated that 15000 MWH of electricity will be produced before the end of the project. Direct reduction of CO2 emissions will therefore exceed the initial target |
| **Component / Outcome 1:** Streamlined and comprehensive market-oriented energy policy and legal/regulatory framework to promote PV grid-connected electricity generation. Power Purchase agreements formulated and signed by selected investors |  | None available at the present time.  | To be completed within 15 months of project initiation and approved by Government one and a half years after start of project | Framework finalized and available for consultation by potential investors.Standardised PPAs formulated and the SSDG scheme reviewed | With the help of EDF a competitive bidding exercise was carried out using a standard RFP and PPAs to procure five 2 MW solar PV plants | To be completed by September 2015Standardized PPAs to be completed by September 2014 |
|  | **Output 1.1:** Report streamlining market-oriented energy policy and legal/regulatory framework to regulate on-grid PV electricity generation. | Potentially overlapping responsibilities of various Government institutions make the decision process quite cumbersome and complicated. | To be completed within 15 months of project initiation and approved by the Government 1.5 after start of project | Report confirming that policy and framework arrangements are in place. |  | Preparation of a report on the requirements for solar PV integration will be ready by September 2014 |
|  | **Output 1.2:** Strategy document aimed at sharpening the focus of the respective roles and responsibilities of MEPU and CEB for on-grid PV. | Not available at the present time. | To be completed within 15 months of project initiation and approved by the Government 1.5 years after start of project  | Document available and procedures in place. |  | Agreement of MEPU will be sought to launch a review of the roles and responsibilities of various organizations |
|  | **Output 1.3:** Criteria and procedures for the introduction of a transparent process in the selection/award of projects for development. | Not available at the present time.  | To be completed within 15 months of project initiation and approved by the Government 1.5 years after start of project Competitive selection/award of projects completed by the end of 1.5 years after project start. | Guidelines available and put into practice. | Bidding document has been prepared by EDFTechnical criteria and procedures are being worked out by Mercados | September 2014 for technical criteria and proceduresCompletion of standard bidding document for power projects by March 2015 |
|  | **Output 1.4:** One-stop shop for issuance of construction licenses and permits to developers. | Under the business-as-usual scenario, the average time to secure all required construction licenses and permits can take up to 12 months. | All construction licenses and permits are issued following completion of feasibility studies and selection of promoters | One-stop shop is operational.Information brochure and website are available. |  | Agreement of MEPU will be sought to launch a consultancy in this respect |
|  | **Output 1.5** Review of the SSDG scheme including financial model, technical specifications towards improving the scheme and moving to the next phase | Not available at the present time. SSDG scheme expected to be over by end of 2011 | To be completed within 18 months of project initiation and applied by Government thereafter | Document available on the results achieved by the scheme and options for improvement suggested for next phase | This is being done by Mercados | Report to be ready by September 2014 |
|  | **Output 1.6:** Standardised and signed Power Purchase Agreements with identified developers/investors  | Not presently available. | Completed within 15 months of project start. | Power Purchase agreements signed.  | EDF has prepared standard PPAs for 2 MW bidding exercise | Standardised PPA to be completed by September 2014 |
| **Component / Outcome 2:** Capacity available within MEPU and other key Government /Financial Institutions to evaluate the economic and financial viability of grid-connected PV systems and to formulate incentives to attract investors.  |  | None available at the present time. | At least 2 projects evaluated by the end of year 2.Ten staff trained during first 15 months of project. |  Number of staff who participated in and successfully completed capacity development programme. |  | By July 2015 training to be provided to the concerned staff |
|  | **Output 2.1:** Suitable methodology for the economic/financial evaluation of on-grid PV systems. | Not available at the present time. | To be completed within 15 months of project initiation and applied by Government thereafter. | Methodology applied by entities on large scale PV projects |  | By July 2015 standard methodology will be available |
|  | **Output 2.2:** Standard financial evaluation methodology for calculating feed-in tariffs for investors with installed capacities more than 50 kW. | No such evaluation methodology available. | To be completed within 15 months of project initiation and applied by Government thereafter. | Methodology applied by MEPU and used in PPAs |  | By July 2015 standard methodology will be available |
|  | **Output 2.3:** Financial and other incentives to be provided to project developers. Ownership model and investment scheme created | No comprehensive document available at the present time. | To be completed within 15 months of project initiation and applied by Government thereafter. | Document available and incentives operationalised. Financially sustainable mechanisms developed to support Feed in Tariffs |  | In the next budget aim is to remove VAT and customs duties on all connected equipment 2015. As part of the strategy document consultancy the ownership models and investment schemes will be looked into by July 2014 |
|  | **Output 2.4:** Capacity developed withinfinancial institutions to appraise PV projects for lending. Risk mitigation instruments developed to protect lenders and developers. | None available at the present time. | Five to six financial institutions staff trained during first15 months of project.Risk mitigation instruments developed during first 15 months of project. | Number of financial institutions staff successfully trained.Risk mitigation instruments developed and operationalised. |  | By end of July 2014, it is proposed that training be provided on RE project appraisal |
|  | **Output 2.5:** Carbon finance potential developed regarding future on-grid PV investments outside of the project framework. | None available at the present time. | To be completed within 15 months of project initiation. | Options assessed and potential developed to access carbon finance in future investments. | As the Kyoto Protocol is still uncertain, there is a need to use the proposed budget for alternative activities  | Funding will be allocated to a demonstration PV plant on the Rodrigues Regional Assembly Building  |
| **Component / Outcome 3:** Capacity available to upgrade existing solar radiation data, expand geographical coverage for solar resource measurement, formulate solar map technical guidelines and standards for and provide oversight, monitoring and certification of PV systems, and provide installation, operation, maintenance and repair services. Necessary technology transfer models formulated and operationalised |  | No such activity being implemented. | 15 sites targeted for enhanced solar radiation assessment in year 1.Published guidelines and technical standards within 15 months of project start.Manual for installation, operation, maintenance and repair services developed by year 1.5, 40 people trained in the various categories by the end of the project. | Teams trained in various categories of activities. Guidelines and technical standards for on-grid PV systems. Technology delivery models put in place |  | Mauritius Meteorological Services will be tasked with the purchase of Pyranometers and measurement of solar data. As part of the strategic consultancy, the technology transfer models will be looked into  |
|  | **Output 3.1:** Programme for upgrading existing solar radiation data, expand geographical coverage for solar resource measurement.Publication of a solar Map for Mauritius, Rodrigues and the Outer Islands | Presently available solar radiation data insufficient to accurately design on-grid PV systems... | Upgrade/expand coverage to 15 sites completed by the end of project.Four Meteorological Services staff trained within first 15 months of project. | Instrumentation to measure solar radiation data installed.Software developed for interpretation of data.Solar map developed and published |  | By end July 2015 solar map will be produced for Mauritius, Rodrigues and Agalega.CEB will contact MRC for possibility of MRC working with the Meteorological services to produce solar map |
|  | **Output 3.2:** Guidelines and technical standards for PV system components and grid-connected PV systems. | Not presently available. | Completed within first 18 months of project. Applied to sites identified for development. | Guidelines and standards published and operationalised. | Guidelines will be included as part of the Grid Codes being developed by Mercados for MSDG.PV plants have to be compliant with IEC Code | IEC standards are already applied. The guidelines will be ready by Sep 2014 |
|  | **Output 3.3:** Capacity developed within MEPU/CEB to determine grid absorption capacity and provide oversight, monitoring and certification of on-grid PV systems. | Not presently available. | Six MEPU/CEB staff trained during first 18 months of project. | Capacity development plan formulated and implemented. | The capacity exists with CEB but not MEPU. Owning to the fact that MEPU is not concerned with technical installation parameters, training would concern CEB. Training is part of consulting assignment to Mercados | Training is intended to be delivered in August 2014 |
|  | **Output 3.4:** Local capacity for installation, operation, maintenance and repair services. | None available now. | 30 people trained by the end of the project. | Availability of qualified and certified companies/individuals for installation, operation, maintenance and repair services. | MITD is providing training and capacity development | More than 30 persons have already been trained. The budget can be reallocated to Rodrigues Regional Assembly demonstration PV plant by March 2015 |
|  | **Output 3.5:** Technology transfer opportunities identified, and delivery models formulated and operationalised. | None at the present time. | Completed within 2 years of project start. | Report confirming that technology delivery models are being implemented.  |  | Through the strategic consultancy the technology transfer models will be looked into and training delivered by March 2015 |
| **Component / Outcome 4:** Promoters assisted financially through Feed in Tariffs and projects implemented and supplying electricity to the CEB grid |  | Not presently available. | Construction of at least 3 MW of on-grid PV systems completed by the end of the project.  | Funding used for toping part price differential in Feed in tariffs for a determined timed | Discussions have already been engaged on how to allocate the funding to the PPAs being singed following competitive bidding | By end 2014 a MOU will be singed between CEB and UNDP on the use of the funding for part payment of the PPAs concerned over a period to be defined |
| **Component / Outcome 5:** Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the country.  |  | Lack of sufficient information to pursue programme. | Increased awareness among stakeholders in place to promote and develop the market for on-grid PV | Outreach programme formulated. Project experience compiled, analyzed and disseminated. |  | By March 2015 a special section will be put in place on the CEB website for dissemination of information |
|  | **Output 5.1:** Plan to implement outreach/promotional activities targeting domestic (and international) investors. | No such plan available. | Completed within 10 months of project initiation. | Plan available and operationalised. |  | By January 2015 CEB will have an outreach programme with the support of a local advertising agency |
|  | **Output 5.2:** Capacity development of MEPU to monitor and document project experience. | No capacity development programme. | 10 Government staff trained by the end of project. | Capacity development material prepared. |  | Training will be provided to the MEPU and CEB on knowledge management by March 2015 |
|  | **Output 5.3:** Published materials on project experience/best practices and lessons learned. | Lack of information on best practices and lessons learned. | Completed within 3 months of project end. | Project experience and best practices compiled, published and available on website. |  | By July 2015 best practices and lessons learned in Mauritius Rodrigues and Outer islands will be published |

## Project Implementation Arrangement

At the project design stage, the arrangements depicted in Fig 1 below were prescribed for implementation of the project under the NEX execution modality, with the Ministry of Energy and Public Utilities as the Executing Agency / Implementing Partner and UNDP as the Implementing Agency. A National Project Director (NPD), to be appointed by MEPU, is responsible for project implementation, delivery of project outputs and optimum use of resources, with the assistance of a Project Manager.

The Project Manager (PM) heads a Programme Management Unit, and is responsible for the day to day operational aspects, and the overall project coordination and implementation. The PM is responsible for preparation of quarterly progress reports, work plans, and the supervision of project staff and project experts. The PM is assisted by a Project Assistant, and consults regularly with relevant government institutions and other stakeholders. As needed, technical experts from different disciplines and project management consultants with expertise in project, finance, legal matters, etc. are recruited on a long-term or short-term basis, according to the established requirements.

A Steering Committee (SC) provides strategic decisions and management guidance to implement the project. The SC is made up of representatives of relevant ministries and government departments, and UNDP, and is chaired by the NPD.

On 17 February 2014, MEPU delegated the responsibilities to implement the project to CEB, following a delay of some two and a half years to start the project, due to four rounds of unsuccessful recruitment of a Project Manager. The Corporate Planning and Research Manager of CEB was nominated as the NPD, and a team of two engineers from the CEB assumed the responsibilities of the PM and Project Assistant on a part time basis.



Figure 1: Implementation Arrangement Organigram

As regards the project timing and milestones, the CEO Endorsement approval of the project was obtained in June 2011, for implementation over a 4-year period, starting in September 2011 and closing by September 2015. The Mid Term Evaluation (MTE) was planned for Oct 2013. The actual signature of the Project Document by the Government of Mauritius and UNDP took place in October 2011. Due to the delay in starting the project, the inception workshop was held on 10/11 April 2014, after the delegation by MEPU to CEB to implement the project. The MTE is being carried out in April / May 2015, and the Closure of the project is now planned for the end of 2016, if the case for an extension is approved.

## Main stakeholders

The main stakeholders of the project are:

* Ministry of Energy and Public Utilities – Executing Agency and Implementing Partner
* Central Electricity Board – Producer and supplier of electrical energy, operating under MEPU and involved in all project components; Executing Agency since February 2014
* UNDP CO – Implementing Agency, provides support services
* UNDP / GEF RCU – Monitoring and Evaluation of the project
* Ministry of Environment Sustainable Development, Disaster and Beach Management – Involved in Components 1,4, 5 and provides Quality Assurance
* Ministry of Finance and Economic Development – GEF OFP, involved in Components 1,2, 4
* Rodrigues Regional Assembly – Represents Rodrigues and provides Quality Assurance
* Mauritius Institute of Training and Development – Provide training for solar PV, Component 3
* Outer Islands Development Corporation – Represents Agalega and provides Quality Assurance
* Mauritius Meteorological Services – Support to prepare solar maps under Component 3
* Project Promoters from Private Sector – To participate in pilot projects under Component 4
* Suppliers of Solar PV equipment – Technical personnel benefit capacity building, Component 3
* External Consultants - For technical studies and reports as required, and evaluation
* University of Mauritius – Identified during MTE for possible collaboration to prepare solar maps

# Findings: Project Strategy

The findings are based on the evaluation criteria and questions (see Annex B), so that a link can be made between what was asked and what was found. In this Chapter an evaluation of the strategy of the Project, in terms of its design and results framework has been presented. The strategy of the project was the result of consultations and background analysis during project design stage and relevance to Mauritius’s development context.

## Project design

**Mid-term evaluation questions (see Annex B)**

|  |
| --- |
| * What is the problem being addressed by the project and are the underlying assumptions are correct
* Does the project strategy provide the most effective route towards expected/intended results?
* Were lessons from other relevant projects properly incorporated into the project design?
* How the project addresses priorities of Mauritius. Was the project concept in line with the national sector development priorities and plans of Mauritius?
* Were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
* To what extent relevant gender issues were raised in the project design.
* Are there are major areas of concern, recommend areas for improvement.
* Does the project adequately take into account the national realities, both in terms of institutional and policy framework in its design and implementation?
* Is the project country-driven?
* If the project progress is not good, what changes could have been made (if any) to the project design in order to improve the achievement of the project’s expected results during rest of the project implementation period.
 |

Given the limited indigenous resources (small hydro and bagasse on the main island of Mauritius), the Republic of Mauritius is largely dependent on imported fossil fuels to meet its electricity needs (generation mix of Mauritius island for 2009: 16% bagasse, 5% hydro, 79% fossil fuel for total generation capacity of 442 MW). In the year 2009, besides wind turbines at 2 locations in Rodrigues totalling 1.5 MW capacity installed in 1990 and 2008, the other islands of the republic were totally dependent on fossil fuel based power generation. With the ever increasing demand for power coupled with the increasing prices of fossil fuels, the government wants to increase the share of renewable in the overall generation mix. Long term energy strategy 2009-2025 envisages increasing the share of renewables from 21% in 2009 to 35% by 2025. In this regard it is noted that significant efforts were made in the past towards efficient use of bagasse; unsuccessful trials were made in Mauritius with wind power[[5]](#footnote-5); there is no more hydro power potential. The government determined grid connected solar PV as one of the important contributors towards the objective of increasing the share of renewables.

### Problem being addressed

As per the long term energy strategy 2009-2025, the target for grid connected PV by the end of the year 2025 is about 8-10 MW. However, there were barriers towards achieving this target. There was very limited experience in Mauritius with on-grid PV electricity generation (2 kW PV panels on CEB building at Rose Hill in 2008 and 22.4 kW at IFS building at Ebene in 2009). The barriers towards larger uptake of Solar PV included Institutional barriers due to overlapping responsibilities of CEB and MEPU; Regulatory barriers due to absence of legal framework for grid connected solar PV; Financial barriers by way of higher cost of generation for solar PV technology; Technology barriers due to lack of experience, demonstration, resource mapping; Information Barrier due to limited awareness. The project addresses the barriers to achieve the stated target for solar PV. Thus, the project addresses the problem of dependence of Mauritius on fossil fuels for its energy needs, while it specifically addresses the barriers towards larger uptake of solar PV in the country.

The strategy of the project was centred on removing the barriers, considering that the removal of barriers will lead to larger uptake of solar PV. The strategy provided for five different components of the project, with each component targeted specifically at a set of barriers. Thus the targeted end result of the project was larger uptake of grid connected solar PV. The project strategy of removal of barriers provides an effective route towards the intended result of larger uptake of grid connected solar PV. The underlying assumption that the removal of barriers will lead to higher uptake of solar PV has proven to be correct when seen in the present day context.

### Relevance and country drivenness

The project is in line with the ‘Long Term Energy Strategy 2009-2025’ of the country. As the Republic of Mauritius (island of Mauritius and other islands) is dependent on fossil fuels for its energy needs, the project is highly relevant. The project is in line with the priorities and strategy of the country for the power sector.

Considering that one of the objectives of the project is reduction in the emission of GHG to address climate change, this project is in line with the stated position of Mauritius on the subject of GHG mitigation, that reads as follows: “Developing countries voluntarily undertake reduction of greenhouse gas through formulation and implementation of Low Emission Development Strategies and Nationally Appropriate Mitigation Actions subject to provision of financial, capacity building and technological support”. Although the project is specifically targeted towards solar PV the outcomes and outputs of the project will benefit other sources of renewable energy due to creation of a policy and regulatory framework which can be adapted as such for other renewable sources of energy.

The CEO endorsement document mentions that PPG activities were implemented successfully and such activities allowed for sufficient data collection and outreach to key stakeholders. Project document mentions about the letter of co-financing support. There is no other evidence to support those discussions and that consultations were held with the stakeholders to take into account their perspectives. However, it is implicit that such discussion would have taken place during PPG phase of the project. The project or its impacts have no contribution towards gender equality, which is one of the other priority areas of UNDP. However, the project does not have any negative impacts in this regard. The project design takes into consideration the national realities.

## Results framework / Log-frame

**Mid-term evaluation questions (see Annex B)**

|  |
| --- |
| * How ‘SMART’, (Specific, Measurable, Attainable, Relevant, Time-bound), the midterm and end-of-project targets are.
* Are the project’s objectives and outcomes or components clear, practical, and feasible within its time frame?
* Has the progress so far led to, or could in the future catalyze, beneficial development effects (i.e. income generation, gender equality and women’s empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
* Are the broader development and gender aspects of the project are being monitored effectively.
 |

The Results Framework / Log-frame of the project as given in the project document and as revised during inception were presented in Chapter 3 of the report (Table 5). Due to considerable time gap of almost 30 months between the date of signing of project document and the project inception meeting, the Log-Frame of the project was revised at the time of project inception to account for the changed situation.

The Project Document is concise and encompasses the required details. It addresses the barriers towards larger uptake of grid connected solar PV in its different components and addresses the capacity strengthening needs into an appropriate list of expected outcomes and outputs. However, it is lacking in terms of specific activities needed to realize the results, referred in the Results Framework. The project objectives, different components of the project, the outcomes and outputs as mentioned in the Project Document are clear and practical. The objectives were achievable within the project time frame. However, due to delay of 30 months (about 65% of the overall time frame for the project) in the actual start of the project due to administrative reasons it would not be possible to achieve many of the outcomes and outputs of the project without a time extension to the project. More details regarding the time extension required to achieve the outcomes and outputs of the project are provided in next chapter (Chapter 5: Progress towards Results).

The Log-Frame gives the indicators against the project objective at the aggregate level, for each of the five Outcomes of the project and for different Outputs of each of the Outcomes. For the project objective the indicator used does not adequately represent achievement of the objectives of the project as mentioned in the Log-Frame. The establishment of any specified capacity of Solar PV due to the support provided by the project does not imply that the barriers towards solar PV have been adequately removed.

The target and the indicators used for Outcome 4 of the project and that for the project at an aggregate level are the same (except for some difference in the wording used), which do not seem to be appropriate. It needs to be appreciated that removal of barriers would need much more that providing financial support (by way of feed in tariff support) to a few projects. The project strategy has taken this into account during the project design, by having project components towards capacity building, technology support, awareness creation etc.

Other than what has been mentioned in the above two paragraphs, the process / achievement indicators for different outcomes and outputs of the project are comprehensive and meet the standard of ‘SMART’[[6]](#footnote-6) indicators.

As the project will remove the barriers towards grid connected solar PV systems, more such systems will be installed in future. Thus, the project in future would lead to creation of opportunities for the enterprises in the small and medium scale to become IPP, by putting up grid connected solar PV power generation systems. There will also be creation of opportunities in the services sector for repair and maintenance of solar PV systems. Most of these beneficial impacts of the project are likely to happen over a longer period of time, beyond the project implementation time frame. Thus monitoring of such beneficial impacts during the project implementation period is neither practical nor feasible.

# Findings: Progress towards results

This chapter of the report provides the findings of the Mid Term Evaluation in terms of progress made towards achievement of the results of the project in terms of different outcomes and outputs. The fact that there were significant delays in the actual start of the project was taken into consideration

While the start date of the project is October 2011, actual implementation of the project started only in April 2014 when the inception workshop of the project was held. The reason for the delay is the failure to recruit a project manager, in spite of four recruitment attempts. In the absence of a project manager no progress towards implementation of the project could be made till February 2014, when the project was delegated by MEPU to CEB. Actual implementation of the project could only start then.

However, during the period from October 2011 to February 2014, CEB engaged in parallel with promoters on commissioning of PV plants in Mauritius, considering that these activities will later merge with the project. Another activity which CEB engaged with during this period was finalisation of terms of reference for a consulting assignment regarding Medium Sized Distributed Generators (MSDG), co-financing modelling for other technologies etc. This consulting assignment was supported from the SIDSDOCK mechanism through the World Bank (WB). As many of the objectives of the study proposed by the WB and the Outputs / Outcomes of the UNDP / GEF project were overlapping, a collaborative approach was taken to enhance the overall results and effectiveness of the consulting assignment. The consulting assignment was later awarded to AF-MERCADOS EMI (Mercados) of Spain. Besides these two activities, no activity was carried out or planned towards implementation of the project until February 2014.

Due to the delay of about 30 months (about 65% of the overall time frame for the project) some of the important Outcomes and Outputs of the project can only be achieved if there is an extension to the timeline for the project. While making an assessment regarding the likelihood of achievement of the Outcomes and Outputs of the project, it has been considered that a reasonable extension to the project will be granted.

Some outcomes and outputs and their target dates were revised at the time of project inception meeting, taking into consideration the changed situation from the time the project was designed to the actual start date of the project. During the MTE, evaluation of progress towards results has been done in terms of indicators for different outcomes and outputs mentioned in the Log-Frame of the project (as provided in the project document and revised at the time of project inception) (please see Table 5).

**Mid-term evaluation questions (see Annex B)**

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| --- |
| **Progress towards results*** Review the log-frame indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix, with progress indicators for outcomes/outputs, indicating baseline and target levels, as well as current level and/or reported in PIR linked with ratings for each outcome

**Global environmental impacts*** Results in terms of contribution to sustainable development benefits, as well as global environmental benefits (direct and indirect emission reduction)
* Compare and analyze the GEF Tracking Tool at the Baseline with the one completed at the time of Midterm Evaluation
* What is the status and issues with employing grid connected solar PV
* What are the remaining barriers to achieving the project objective in the remainder of the project?
* What are the aspects of the project that have already been successful and what are the ways in which the project can further expand these benefits.
 |

## Attainment of outcomes and outputs

This section of the report provides an overview of the results of different Outcomes of the project. In the Tables below, the column with ‘Level at PIR’ is based on the second PIR (for the year 2014). Although the Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects specifies that the level at first PIR be reported, we have chosen to provide the values of the second PIR. Due to delay in implementation there was no progress at the time of preparation of first PIR (for the year 2013).

**Outcome 1: Streamlined and comprehensive market-oriented energy policy and legal/regulatory framework to promote PV grid-connected electricity generation. Power Purchase agreements formulated and signed by selected investors**

Table 6 below provide an overview of results (Outputs) for Outcome 1 of the project against the set of indicators as listed in Table 5.

**Table 6: Progress towards results: Outcome 1**

| **Output** | **Indicators** | **Baseline Level[[7]](#footnote-7)** | **Revised Baseline (if applicable)[[8]](#footnote-8)** | **Midterm Target[[9]](#footnote-9)** | **Project Target[[10]](#footnote-10)** | **Revised Target[[11]](#footnote-11)** | **Level at PIR[[12]](#footnote-12)** | **Status at MTE** | **Rating at MTE[[13]](#footnote-13)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcome 1:** Streamlined and comprehensive market-oriented energy policy and legal/regulatory framework to promote PV grid-connected electricity generation. Power Purchase agreements formulated and signed by selected investors | Framework finalized and available for consultation by potential investors.Standardised PPAs formulated and the SSDG scheme reviewed | None available at the present time.  | With the help of EDF a competitive bidding exercise was carried out using a standard RFP and PPAs to procure five 2 MW solar PV plants | To be completed  |  | To be completed by September 2015Standardized PPAs to be completed by September 2014 | Not yet initiated |  | **MS** |
| **Output 1.1:** Report streamlining market-oriented energy policy and legal/regulatory framework to regulate on-grid PV electricity generation. | Report confirming that policy and framework arrangements are in place. | Potentially overlapping responsibilities of various Government institutions make the decision process quite cumbersome and complicated. |  | To be completed  |   | Preparation of a report on the requirements for solar PV integration will be ready by September 2014 | Not yet initiated | Part of consultancy awarded by MEPU[[14]](#footnote-14).  | **MS** |
| **Output 1.2:** Strategy document aimed at sharpening the focus of the respective roles and responsibilities of MEPU and CEB for on-grid PV. | Document available and procedures in place. | Not available at the present time. |  | To be completed  |  | Agreement of MEPU will be sought to launch a review of the roles and responsibilities of various organizations | Not yet initiated |  Part of consultancy awarded by MEPU | **MS** |
| **Output 1.3:** Criteria and procedures for the introduction of a transparent process in the selection/award of projects for development. | Guidelines available and put into practice. | Not available at the present time.  | Bidding document has been prepared by EDFTechnical criteria and procedures are being worked out by Mercados | To be completed |  | September 2014 for technical criteria and proceduresCompletion of standard bidding document for power projects by March 2015 | Not yet initiated | For 5\*2 MW procurement procedures of CEB were followed | **MS** |
| **Output 1.4:** One-stop shop for issuance of construction licenses and permits to developers. | One-stop shop is operational.Information brochure and website are available. | Under the business-as-usual scenario, the average time to secure all required construction licenses and permits can take up to 12 months. |  | To be completed |  | Agreement of MEPU will be sought to launch a consultancy in this respect |  | No action | **U** |
| **Output 1.5** Review of the SSDG scheme including financial model, technical specifications towards improving the scheme and moving to the next phase | Document available on the results achieved by the scheme and options for improvement suggested for next phase | Not available at the present time. SSDG scheme expected to be over by end of 2011 | This is being done by Mercados | To be completed |  | Report to be ready by September 2014 | Not yet initiated | Done as a part of Mercados[[15]](#footnote-15) report | **S** |
| **Output 1.6:** Standardised and signed Power Purchase Agreements with identified developers/investors | Power Purchase agreements signed.  | Not presently available. | EDF has prepared standard PPAs for 2 MW bidding exercise | To be completed |  | Standardised PPA to be completed by September 2014 |  | Completed as part of Mercados report | **S** |

Output wise the status of activities and actual achievements at the time of MTE for Outcome 1 of the project is as follows:

* **Output 1.1 & Output 1.2**: MEPU has awarded a consultancy with support from AFD for providing Technical Assistance towards achieving the mission stated in the Energy Policy. The tasks include recommendations on policies and regulations on Renewable Energy (including Renewable Energy Master Plan and Action Plan 2015-2030, review of the current policies and regulatory framework, improvement of legislation, regulation, incentives, capacity building and training). Although this consulting assignment of nine months duration is on renewable energy and not specifically on solar PV it covers Output 1.1 and Output 1.2 implicitly. During the 3rd steering committee meeting (February 2015) it was decided to take out these two components from the project as they are being take care by MEPU. The deliverables of this consulting assignment are thus likely to be available within the time frame (assuming that extension of 18 months to the project will be granted) of the UNDP-GEF project. Hence the progress towards achievement of Output 1.1 and 1.2 has been rated as **Moderately Satisfactory**. Satisfactory rating is not justified because of the delay beyond the revised target date and lack of control and visibility by project management towards achievement of deliverables of the consulting assignment awarded by MEPU. Further, during mission meetings with the officials of AFD, it was pointed out that the scope of consulting assignment is very broad and with the reduced time frame (of nine months) some of the originally planned objectives of the consultancy may not be fully achieved. Another reason for not providing a satisfactory rating is that the indicator is, ‘availability of a report confirming that policy and framework arrangement are in place’, whereas the consultancy awarded by MEPU will be restricted to a set of recommendations. There is a possibility of recommendations and suggestions not being accepted by the government.
* **Output 1.3:** Inception report of the project mentions that the consulting assignment awarded to Mercados will be providing technical criteria and procedures. Subsequent work plans and progress reports also mention this Output being covered in the consulting assignment to Mercados. However, the deliverables provided by Mercados do not cover this aspect either explicitly or implicitly. The inception report mentions availability of a bidding document prepared by EDF. During the mission meetings the project team pointed out that this output has already been achieved internally by CEB. It was argued that as a part of bidding process for the five solar PV projects of 2 MW each, CEB prepared the RFP wherein the criteria and procedures for selection / award of contract were established. Hence it is concluded that this Output has already been achieved. However, the achievement is being rated as **Moderately Satisfactory**. Satisfactory rating has not been granted as the criteria and the procedures to be followed are not in public domain and are thus not transparent enough.
* **Output 1.4:** There is no activity carried out or planned to achieve this Outcome. During discussions, the project team pointed out that it is a policy matter and some part of it might be covered in the consulting assignment awarded by MEPU (please see Foot note 10). Considering that this Output is not likely to be achieved during implementation of the project, the progress towards achievement has been rated as **Unsatisfactory**.
* **Output 1.5**: This Output has been achieved. Review of the SSDG scheme, including financial model, technical specifications towards improving the scheme etc. was done by Mercados as part of the consulting assignment (please see Foot note 11). Thus, the progress towards achievement has been rated as **Satisfactory**.
* **Output 1.6**: This Output has been achieved. A standardised ESPA (Energy Supply and Purchase Agreement) has been developed by Mercados as part of the consulting assignment (please see Foot note 11). Thus a **Satisfactory** rating has been awarded

An overview of the bullet points above clearly indicates that achievements against Outcome 1 of the project has been largely due to the pro-active approach of CEB (to engage with private sector PV operators and with WB for consulting on MSDG) in the absence of any planned activities under the project for quite some time. Nevertheless in the end it is the result which matters. Considering that some of the Outputs of this Outcome are not on track and unlikely to be achieved during the project implementation timelines, overall progress towards achievement for Outcome 1 has been rated as **Moderately Satisfactory**.

**Outcome 2: Capacity available within MEPU and other key Government/Financial Institutions to evaluate the economic and financial viability of grid-connected PV systems and to formulate incentives to attract investors.**

Table 7 below provide an overview of progress towards results of different outputs of Outcome 2. Progress has been assessed in terms of indicators listed in Table 5.

**Table 7: Progress towards results: Outcome 2**

| **Output** | **Indicators** | **Baseline Level** | **Revised Baseline**  | **Midterm Target** | **Project Target** | **Revised Target** | **Level at PIR** | **Status at MTE** | **Rating at MTE** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcome 2:** Capacity available within MEPU and other key Government/Financial Institutions to evaluate the economic and financial viability of grid-connected PV systems and to formulate incentives to attract investors.  |  Number of staff who participated in and successfully completed capacity development programme. | None available at the present time. |  |  | At least 2 projects evaluated by the end of year 2.Ten staff trained during first 15 months of project. | By July 2015 training to be provided to the concerned staff |  | RFP issued for consultancy to cover most of the Outputs of Outcome 2. Target date of completion is July 2015  | **S** |
| **Output 2.1:** Suitable methodology for the economic/financial evaluation of on-grid PV systems. | Methodology applied by entities on large scale PV projects | Not available at the present time. |  | To be completed within 15 months of project initiation and applied by Government thereafter. | NA | By July 2015 standard methodology will be available | Not yet initiated | It is part of the RFP mentioned against Outcome 2 | S |
| **Output 2.2:** Standard financial evaluation methodology for calculating feed-in tariffs for investors with installed capacities more than 50 kW. | Methodology applied by MEPU and used in PPAs | No such evaluation methodology available. |  | To be completed within 15 months of project initiation and applied by Government thereafter. | NA | By July 2015 standard methodology will be available | Part of MSDG assignment being tendered out in Sep. 2015[[16]](#footnote-16) | Completed as part of Mercados report | S |
| **Output 2.3:** Financial and other incentives to be provided to project developers. Ownership model and investment scheme created | Document available and incentives operationalised. Financially sustainable mechanisms developed to support Feed in Tariffs | No comprehensive document available at the present time. |  | To be completed within 15 months of project initiation and applied by Government thereafter. | NA | In the next budget aim is to remove VAT and customs duties on all connected equipment 2015. As part of the strategy document consultancy the ownership models and investment schemes will be looked into by July 2014 | Not yet initiated | Partially achieved as government budget mentions several fiscal incentives for PV. However ownership models and investment schemes have not been created | MS |
| **Output 2.4:** Capacity developed withinfinancial institutions to appraise PV projects for lending. Risk mitigation instruments developed to protect lenders and developers. | Number of financial institutions staff successfully trained.Risk mitigation instruments developed and operationalised. | None available at the present time. |  | Five to six financial institutions staff trained during first15 months of project.Risk mitigation instruments developed during first 15 months of project. | NA | By end of July 2014, it is proposed that training be provided on RE project appraisal | Not yet initiated | It is part of the RFP mentioned above against Outcome 2 | S |
| **Output 2.5:** Carbon finance potential developed regarding future on-grid PV investments outside of the project framework. | Options assessed and potential developed to access carbon finance in future investments. | None available at the present time. | As the Kyoto Protocol is still uncertain, there is a need to use the proposed budget for alternative activities  | To be completed within 15 months of project initiation. | NA | Funding will be allocated to a demonstration PV plant on the Rodrigues Regional Assembly Building  | Not yet initiated | Dropped and funds reallocated to RRA building solar PV project | S[[17]](#footnote-17) |

The status of Outputs and actual achievements at the time of MTE for Outcome 2 is as follows:

* **Output 2.1:** There was no action towards achieving this Output, originally scheduled to be achieved within 15 months from the project start, due to initial delay of the project. At the time of inception workshop the target for achieving all the outputs of Outcome 2 was set at July 2015. It is proposed to appoint a consultant for this Output, RFP for the consulting assignment has already been worked out and the deliverables of the consulting assignment are targeted to be achieved by end of July 2015. Thus, this Output is expected to be achieved in a timely manner. A **Satisfactory** rating has accordingly been awarded.
* **Output 2.2:** This output of the project has already been completed as part of deliverables submitted by Mercados for the MSDG assignment. Thus the progress towards achievement has been rated as **Satisfactory**.
* **Output 2.3:** In the year 2014 Government of Mauritius removed VAT on solar PV. In the budget speech of year 2015, fiscal incentives for solar and other renewable sources of energy were announced, and the land conversion tax for solar PV projects has been waived. Thus, there is significant progress towards achievement of this Output. However, as there are no activities towards creation of ownership models and investment schemes, there is some lacking towards progress for achieving this Outcome. Consequently, it has been rated as **Moderately Satisfactory**.
* **Output 2.4**: This Output has been covered in the RFP for a consulting assignment for Output 2.1. The target date for completion of the consulting assignment is end July 2015. Thus, this Output is likely to be achieved in a timely manner. Accordingly, the progress towards achievement has been rated as **Satisfactory**.
* **Output 2.5**: As the future of Carbon Markets is uncertain, it was decided at the inception meeting to drop this output and the funds be utilised for establishing a solar PV demonstration project at Regional Assembly building at Rodrigues**.** Consequently, progress towards achievement has been evaluated in terms of progress made towards establishment of demonstration project at the RRA building. Proposal to put solar PV at the regional assembly was approved in the second meeting of the steering committee (October 2014). Tendering for procurement and installation is presently underway. Target date for commissioning of the solar PV facilities is August 2015. As there is sufficient progress towards establishment of solar PV as planned, the progress towards achievement of results has been rated as **Satisfactory**.

An overview of the bullet points above clearly indicates that achievements against Outcome 2 is satisfactory. Accordingly, the progress towards results for Outcome 2 is rated as **Satisfactory**.

**Outcome 3: Capacity available to upgrade existing solar radiation data, and provide oversight, monitoring and certification of PV systems, and provide installation, operation, maintenance and repair services. Necessary technology transfer models formulated and operationalised**

Table 8 below provide an overview of progress towards results for different outputs of Outcome 3.

**Table 8: Progress towards results: Outcome 3**

| **Output** | **Indicators** | **Baseline Level** | **Revised Baseline (if applicable)** | **Midterm Target** | **Project Target** | **Revised Target** | **Level at PIR** | **Status at MTE** | **Rating at MTE** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcome 3:** Capacity available to upgrade existing solar radiation data, expand geographical coverage for solar resource measurement, formulate solar map technical guidelines and standards for and provide oversight, monitoring and certification of PV systems, and provide installation, operation, maintenance and repair services. Necessary technology transfer models formulated and operationalised | Teams trained in various categories of activities. Guidelines and technical standards for on-grid PV systems. Technology delivery models put in place | No such activity being implemented. |  | 15 sites targeted for enhanced solar radiation assessment in year 1.Published guidelines and technical standards within 15 months of project start.Manual for installation, operation, maintenance and repair services developed by year 1.5 | 40 people trained in the various categories by the end of the project. | Mauritius Meteorological Services will be tasked with the purchase of Pyranometers and measurement of solar data. As part of the strategic consultancy, the technology transfer models will be looked into  | Activities not yet initiated |  | **MS** |
| **Output 3.1:** Programme for upgrading existing solar radiation data; expand geographical coverage for solar resource measurement.Publication of a solar Map for Mauritius, Rodrigues and the Outer Islands | Instrumentation to measure solar radiation data installed.Software developed for interpretation of data.Solar map developed and published | Presently available solar radiation data insufficient to accurately design on-grid PV systems... |  | Four Meteorological Services staff trained within first 15 months of project. | Upgrade/expand coverage to 15 sites completed by the end of project. | By end July 2015 solar map will be produced for Mauritius, Rodrigues and Agalega.CEB will contact MRC for possibility of MRC working with the Meteorological services to produce solar map | Activates not yet initiated | RFP for consultancy is under preparation | **MS** |
| **Output 3.2:** Guidelines and technical standards for PV system components and grid-connected PV systems. | Guidelines and standards published and operationalised. | Not presently available. | Guidelines will be included as part of the Grid Codes being developed by Mercados for MSDG.PV plants have to be compliant with IEC Code | Completed within first 18 months of project | Applied to sites identified for development. | IEC standards are already applied. The guidelines will be ready by Sep 2014 | Activates not yet initiated | Completed as part of Mercados Report | **S** |
| **Output 3.3:** Capacity developed within MEPU/CEB to determine grid absorption capacity and provide oversight, monitoring and certification of on-grid PV systems. | Capacity development plan formulated and implemented. | Not presently available. | The capacity exists with CEB but not MEPU. Owning to the fact that MEPU is not concerned with technical installation parameters, training would concern CEB. Training is part of consulting assignment to Mercados | Six MEPU/ CEB staff trained during first 18 months of project. |  | Training is intended to be delivered in August 2014 | Partly covered under the MSDG consulting assignment to MercadosHowever a dedicated consultancy will be required | Training was imparted by Mercados as part of consulting assignment | **S** |
| **Output 3.4:** Local capacity for installation, operation, maintenance and repair services. | Availability of qualified and certified companies/individuals for installation, operation, maintenance and repair services. | None available now. | MITD is providing training and capacity development |  | 30 people trained by the end of the project. | More than 30 persons have already been trained. The budget can be reallocated to Rodrigues Regional Assembly demonstration PV plant by March 2015 | MITD has started to deliver courses on PV installation since 2012 | MITD has been providing training since 2010. This activity was scrapped during the inception meeting | **Not Rated** |
| **Output 3.5:** Technology transfer opportunities identified, and delivery models formulated and operationalised. | Report confirming that technology delivery models are being implemented.  | None at the present time. |  |  | Completed within 2 years of project start. | Through the strategic consultancy the technology transfer models will be looked into and training delivered by March 2015 | Activities not yet initiated | No activities are happening or are planned | **U** |

The status of activities and actual achievements for outputs of Outcome 3, at the time of MTE, are as follows:

* **Output 3.1**: This output is targeted towards mapping of solar resources of Mauritius (including the island of Mauritius, Rodrigues, and Agalega). At the project design stage, due to poor quality of solar resource data, entrepreneurs were finding difficulties to determine and predict performance of solar PV power generation facilities. Considering that existing data available with Meteorological Department are not accurate and sufficient, the project design has provided for installation of Pyranometers, collection of data and preparation of solar map. Project team is presently working on the RFP to award a consultancy. As the overall cycle of installation of Pyranometers, collection of data (over a period of one year) and preparation of solar map would require considerable about of time, deliberations are being made to find out ways to achieve this Outcome in a shorter span of time. During the mission it was learnt that some in-house work for collection of solar radiation data (using Pyranometers) is being carried out at the University of Mauritius. One of the possibilities being explored by the project team is participation of University of Mauritius for this Output (if this leads to optimal utilisation of resources and available time). In any case, this Output is unlikely to be achieved without an extension to the project. In this case while evaluating the progress towards results and likelihood of achievement of results for Output 3.1 it has been assumed that an extension of about 18 months will be granted to the project and this Outcome is likely to be achieved in this time frame. Progress towards results has been rated as **Moderately Satisfactory**, as there is significant delay with respect to the revised target date, for achievement of this Output.
* **Output 3.2 and Output 3.3:** Thanks to the consulting assignment for MSDG awarded to Mercados in a timely manner, and to the pro-active approach of CEB; these two Outputs of the project have already been achieved. Accordingly, the progress towards results for these Outputs is rated as S**atisfactory**.
* **Output 3.4**: During the inception meeting it was felt that the training on Solar PV has already being provided by MITD. It was considered that due to evolution in the situation since the time when the project was designed and the time of inception of the project, this part of the project is no more relevant. Accordingly, it was decided to drop this Output and the funds be re-allocated for other relevant activities. Accordingly, no rating is provided.
* **Output 3.5**: As per the Project document the objective of this Output was creation of proposals for technology transfer opportunities and delivery models formulated and operationalised. The main driver of technology delivery models as envisaged at the time of project design was creation of an enabling environment whereby Public Private Partnership vehicles attracts international sponsors to invest in PV installations. This was to consist of south-south cooperation with technology firms operating in Reunion Island, South Africa, and India/China where PV markets are mature at both small scale and utility scale; learning from projects undertaken in Namibia (GEF projects) as a means to understand the dynamics of a developing market; creating capacity in advisory bodies e.g. Board of Investment (BOI) and Enterprise Mauritius which can in turn provide assistance to local firms to acquire licenses from internationally renowned PV technology providers to commercialise PV equipment adapted to the Mauritian context; and establishing joint venture agreements between PV manufacturers and educational/ research institutions in Mauritius for R&D. No activities have been carried out or are being planned for achieving the stated objective of this Output. During interaction with the project team it was pointed out that there is already an understanding with Reunion Island on technology co-operation for solar PV. The view of the of the evaluators, however is that the present MOU with Reunion Island is not in line with the stated objective of this component of the project. Further technology co-operation with Reunion Island does not adequately represent the width and depth of technology transfer opportunities which were proposed under the project. Accordingly, the progress towards results has been rated as **Unsatisfactory**.

It is evident the achievement of targets (or the progress towards achievement) in case of Outcome 3 has been largely due to the consulting assignment awarded to Mercados for MSDG (Output 3.2 and 3.3). Some activities have been carried out towards achievement of Output 3.1. Accordingly, overall progress towards achievement for Outcome 3 has been rated as **Moderately Satisfactory**.

**Outcome 4: Promoters assisted financially through Feed in Tariffs and projects implemented and supplying electricity to the CEB grid**

Table 9 below provide an overview of progress towards results for Outcome 4.

**Table 9: Progress towards results: Outcome 4**

| **Output** | **Indicators** | **Baseline Level** | **Revised Baseline (if applicable)** | **Midterm Target** | **Project Target** | **Revised Target** | **Level at PIR** | **Status at MTE** | **Rating at MTE** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcome 4:** Promoters assisted financially through Feed in Tariffs and projects implemented and supplying electricity to the CEB grid | Funding used for toping part price differential in Feed in tariffs for a determined timed | Not presently available. | Discussions have already been engaged on how to allocate the funding to the PPAs being singed following competitive bidding |  | Construction of at least 3 MW of on-grid PV systems completed by the end of the project. | By end 2014 a MOU will be singed between CEB and UNDP on the use of the funding for part payment of the PPAs concerned over a period to be defined | The SC has approved the principle of having a (MOU) between UNDP and CEB for the transfer of USD $1.3 M of the GEF fund to finance the price difference (FIT) for the purchase of energy from already committed solar PV projects. | Power purchase agreements (PPA) has been signed with five[[18]](#footnote-18) private sector parties towards establishment of 2 MW each solar PV plants. Funds to provide feed in tariff support under the project have been transferred in part to CEB.  | **S** |

PIR for the year 2013 reported that for Outcome 4 of the project, CEB in parallel was engaging with the promoters on the commissioning of PV plants in Mauritius with the clear idea that these activities may merge with the project on a later date.

The project at the design stage envisaged to provide feed in tariff support for 3 MW solar PV capacities, but was eventually able to support 10 MW of solar PV capacity. This became possible due to decrease in the capital cost of solar PV (leading to reduction in the cost of generation) and the competitive bidding route followed by CEB. The capital cost has reduced partially due to the global trends and partly due to fiscal incentive being provided by the government (reduction in VAT, and waiver of land conversion charges). At the time of project design 3MW targeted capacity was estimated with the assumption that USD 1.3 million of GEF funds are allocated for providing Feed in Tariff support of USD 0.11 /kWh (65% of the projected difference in the solar PV power and the marginal cost of generation of CEB) for 11,765,000 kWh over a period of 2.5 years. However, actual difference between the Tariff offered to solar PV plants and the cost of generation by CEB has been MUR 1.61 / kWh. The five projects which will be provided feed in tariff support from the project are as per Table 10 below.

**Table 10: Beneficiaries of the Feed in Tariff Support Under the project**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No**  | **Project name**  | **Date of signature of Agreement** | **Expected date of Commissioning** | **Name of entity**  |
| 1  | Petite Retraite PV Farm  | 24 February 2014  | 22 March 2016 | Synnove Solar (Mauritius) One Ltd  |
| 2  | L’ Esperance PV Farm  | 24 February 2014  | 22 March 2016 | Synnove Solar (Mauritius) One Ltd  |
| 3  | Fuel PV farm  | 28 July 2014  | 28 July 2016 | Alteo Astonfield Solar Ltd.  |
| 4  | La Gaulette PV farm  | 28 July 2014  | 28 July 2016 | Astonfield Solar (Mauritius) Ltd.  |
| 5 | Harel Mallac  | 28 November 2014 | 28 May 2016 | Solar Field Ltd |

The project document indicates grant of USD 1.3 million for providing feed in tariff support. Part of this amount has been reallocated to Agalega Green Project (USD 100,000) and to Rodrigues Regional Assembly (USD 45,000) to ensure participation of Rodrigues and Outer Islands in the project. With this an amount of USD 1 million plus the contingency of about USD 151,753 is to be distributed towards feed in tariff support by middle of 2015. Based on the available budget, UNDP has committed to provide feed in tariff support to these projects beneficiaries for a period of 19 months from the date of commissioning on the projects. An amount of USD 0.5 million has already been transferred to a separate project account being maintained by CEB to provide feed in tariff support. For the Agalega Green Project, there are still uncertainties. Out of the estimated project cost of MUR 13 million for 75 KW solar PV plant (with batteries), UNDP / GEF is to contribute about MUR 3 million. About MUR 5 million is to come from MID Fund and about MUR 5 million from Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Island. There is now a problem with the availability of MID funds, as the MID Commission has been recently dissolved. One of the alternatives being evaluated is to opt for a lower capacity. It was pointed out during the mission that the capital cost of MUR 13 million was worked out quite some time back and with the cost of solar PV coming down there is a possibility of achieving the planned solar PV system even in the event of non-availability of MID funds. During the steering committee meeting held in February 2015, OIDC representative was asked to submit a feasibility study for the ‘Green Agalega Project’. For the 10 KW solar PV project to be put up on the RRA building, the tendering process is underway and the PV system is planned to be commissioned by end of 2015.

Progress towards results in case of Outcome 4 is in accordance with the timelines mentioned in the project document. However, actual administering of the feed in tariff support by the implementing agency would be much beyond the project timelines (even if the project is granted an extension). As the target for Outcome 4 is on track (in terms of indicators and the timelines), the rating awarded is **Satisfactory**.

**Outcome 5: Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the country.**

Table 11 below provide an overview of progress towards results for different Outputs of Outcome 5.

**Table 11: Progress towards results: Outcome 5**

| **Output** | **Indicators** | **Baseline Level** | **Revised Baseline (if applicable)** | **Midterm Target** | **Project Target** | **Revised Target** | **Level at PIR** | **Status at MTE** | **Rating at MTE** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcome 5:** Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the country.  | Outreach programme formulated. Project experience compiled, analysed and disseminated. | Lack of sufficient information to pursue programme. |  |  | Increased awareness among stakeholders in place to promote and develop the market for on-grid PV | By March 2015 a special section will be put in place on the CEB website for dissemination of information | Activities not yet initiated | Activities have been planned | **MS** |
| **Output 5.1:** Plan to implement outreach/promotional activities targeting domestic (and international) investors. | Plan available and operationalised. | No such plan available. |  | Completed within 10 months of project initiation. |  | By January 2015 CEB will have an outreach programme with the support of a local advertising agency | Activities not yet initiated | Activities have been planned | **MS** |
| **Output 5.2:** Capacity development of MEPU to monitor and document project experience. | Capacity development material prepared. | No capacity development programme. |  |  | 10 Government staff trained by the end of project. | Training will be provided to the MEPU and CEB on knowledge management by March 2015 | Activities not yet initiated | Activities have been planned | **MS** |
| **Output 5.3:** Published materials on project experience/best practices and lessons learned. | Project experience and best practices compiled, published and available on website. | Lack of information on best practices and lessons learned. |  |  | Completed within 3 months of project end. | By July 2015 best practices and lessons learned in Mauritius Rodrigues and Outer islands will be published | Activities not yet initiated | Activities have been planned | **MS** |

It is evident from above Table; no activities have been carried out yet to achieve the objective of this Outcome. However, activities have been planned towards the end of quarter 3 of the year 2015. It is evident that activities to achieve Outcome 5 of the project will get implemented only in case time extension is granted. It is intended to hire the services of a consultancy firm specialising in communication to prepare and carry outreach and dissemination activities. Considering that there is significant delay and the activities are still in the planning stage, progress towards achievement in this case has been rated as **Moderately Satisfactory**.

**Project Objectives:**

In the above paragraphs progress towards achievement for different outputs and outcomes of the project was presented. In view of the progress made towards achievement of targets of different outputs and outcomes of the project, an assessment regarding progress made towards achievement of the objectives of the project is presented in this part of the report.

Different outputs and outcomes of the project were designed to achieve the objective of the project ‘to (assist the government to) remove the barriers with the view to promote PV grid connected electricity generation’. Thus, the evaluation / assessment of progress made towards achievement of the objectives of the projects have been done in terms of progress made towards achieving different outputs and outcomes of the project. This is against the approach of evaluating the progress towards achievement in terms of indicators. One of the reasons for this approach is that in this case, we consider that the indicator (establishment of solar PV facilities under the project or direct reduction in the emission of GHG) does not adequately represent achievement of the objective of removal of barriers (please see section 4.2 of the report). The aspect of GHG emission reductions due to the project has been dealt with separately in the next section of the report. Table 12 provides an overview of progress towards results for the objective of the project. Assessment regarding the status at the time of MTE is based on discussions with the project team, discussion with UNDP CO, discussions with other stakeholders and review of documents. An overview of ratings of progress towards results for the Objectives of the Projects along with that for different Outcome is given in Chapter 8.

**Table 12: Progress towards results: Project Objectives**

| **Output** | **Indicators** | **Baseline Level** | **Revised Baseline (if applicable)** | **Midterm Target** | **Project Target** | **Revised Target** | **Level at PIR** | **Status at MTE** | **Rating at MTE** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| To assist the Government in addressing the barriers with a view to promoting PV grid-connected electricity generation.  | Direct investment in at least 3 MW of on-grid PV installations by end of project. Amount of reduced CO2 emissions compared to the projected baseline | GHG in the electricity generation sector scheduled to increase from 2.03 million tons/year (2008 figures) to almost 3.3 million tons/year by the year 2020.Negligible investments taking place in on-grid PV electricity generation. | Investment in the PV sector are taking place and 5 solar PV plants of capacity 2 MW each will be set up by 2015, subject to Power Purchase Agreements being singed |  | 11,662 2 MWh of electricity generated (as a result of the 3 MW capacity brought on-line) by project completion[[19]](#footnote-19). Direct reduction of 13,295 tons of CO2 over the 4-year FSP project life cycle and 98,400 over the full lifetime of the plants.Estimated cumulative indirect GHG emission reduction of at least 350,000 tons of CO2eq by 2025 on the basis of a conservative policy scenario and a GEF causality factor of 80%. | Assuming that the 10 MW start to produce electricity from 2015 and 1500 hours of sunlight. It is anticipated that 15000 MWH of electricity will be produced before the end of the project. Direct reduction of CO2 emissions will therefore exceed the initial target |  | PPA agreements have been signed with 5[[20]](#footnote-20) solar PV based independent power producers which will be supported under the project. These power plants are likely to be commissioned by mid of 2016 | **MS** |

In order to evaluate the extent the project has addressed (or likely to address) the barriers, an analysis of the barriers has been carried out. Different barriers identified at the time of project design and the strategy for removing the barriers along with the status at the time of MTE are summarized in the Table 13 below:

**Table 13: Summary of barriers and mitigation strategies**

| **Barrier** | **Situation at the time of project design[[21]](#footnote-21)** | **Strategy for addressing barrier at project design** | **Status at MTE** |
| --- | --- | --- | --- |
| Institutional | * Potential overlapping of responsibilities between MEPU and CEB.
* Insufficient human resource capacity to perform effectively
 | * Component 1: Review of structures of both entities and sharpen the focus of their appropriate roles and staffing requirements.
* Components 2, 3, 5: Formulate and implement capacity strengthening programme to address specific barriers
 | * Component 1 of the strategy did not get materialized. However stakeholders do not consider it a major barrier any more
* As training has been provided and with the increase in general awareness it is considered that there is sufficient human capacity
 |
| Regulatory | * Absence of consolidated set of regulations governing on-grid PV.
* Absence of transparent procedures for selection of projects.
 | * Component 1: Develop a compendium of regulations related to on-grid PV development.
* Design and implement transparent procedures for selection of projects.
* Set up one-stop shop to speed up issuance of construction licenses and permits.
 | * With the successful completion of the consulting assignment by Mercados (for details please see Foot note 15) on MSDG, the background for regulatory governing on grid PV has been take care off.
* Some barriers still remain as a transparent procedure for selection of projects and creation of one-stop shop could not materialize
 |
| Financial | * Absence of feed-in tariffs for capacities above 50 KW.
* Non-existence of financial incentives and risk-mitigation instruments.
* Lack of financial support in terms of Feed in Tariffs for large-scale systems to catalyse market
 | * Component 1: Review of SSDG scheme
* Component 2: Design and implement market-oriented tariff structure.
* Design and implement financial incentives and risk-mitigation instruments.
* Development of a sustainable financial mechanism for FITs.
* Develop carbon finance potential for future PV investments.
* Component 4: Provision of financial assistance to top up price differential for Feed in Tariffs
 | * Financial barrier of higher cost of generation of power using solar PV technology has been partially addressed due to falling prices of solar PV technology
* Feed in tariff support would be still needed till the time cost of generation with solar PV technology does not become comparable to marginal cost of generation of CEB.
 |
| Technology | * Lack of sufficient knowledge on latest developments in on-grid PV system design and construction.
* Absence of guidelines and technical standards for on-grid PV.
* Scarcity of experienced PV system designers, installers and maintenance personnel.
 | * Component 3 & 5: Bring local staff up to date with latest developments in on-grid PV system design and construction.
* Formulate guidelines and technical standards for on-grid PV system components and installations.
* Technology transfer delivery models put in place
* Formulate and implement capacity development programme for equipment designers, installers and maintenance personnel.
 | * As not much activity has happened towards outcome 3 and 5 of the project there is still some technology barriers.
 |
| Data andInformation | * Insufficient solar radiation data.
* Lack of promotional/outreach activities and absence of project experience/best practices.
 | * Components 3 & 5: Address issues related to inadequate equipment and insufficient human resource capacity to collect and interpret data.
* Formulate and implement programme for updating of and upgrading coverage for assessment of solar radiation data.
* Procure and install data loggers, develop software for data interpretation and strengthen human resource capacity.
* Implement outreach/promotional activities and document project experience.
 | * These barriers are still remaining. However, activities are being planned for development of solar map
* Activities have also been planned for an outreach program
 |

The project was intended to remove a number of legal, regulatory and market barriers which hamper realization of the potential of solar energy for on-grid electricity generation. The project has succeeded to do so only partially. In view of the progress towards results for different Outputs of the project, the progress towards results for the objectives of the project has been rated as **Moderately Satisfactory**. An overview of the activities carried out under the project clearly indicates that the achievements till the time of MTE is largely attributable to the pro-active actions by CEB to engage with private sector towards creation of grid connected solar PV facilities and the consulting assignment to Mercados for MSDG.

## Global environmental and other impacts

**Mid-term evaluation questions (see Annex B)**

|  |
| --- |
| * Results in terms of contribution to sustainable development benefits, as well as global environmental benefits (direct and indirect emission reduction)
* Compare and analyze the GEF Tracking Tool at the Baseline with the one completed at the time of Midterm Evaluation
* What is the status and issues with employing grid connected solar PV
* What are the remaining barriers to achieving the project objective in the remainder of the project?
* What are the aspects of the project that have already been successful and what are the ways in which the project can further expand these benefits.
 |

* + 1. *GHG emission reduction estimates*

At the time of its design the project has projected direct **GHG emission reductions** of 13,295 tons of CO2 during its implementation and direct GHG emission reductions of 98,400 of tons of CO2 post implementation of the project. Additionally, indirect GHG emission reductions of 350,000 tons of CO2 were projected due to further market transformation.

Direct GHG emission reductions (both during the project and after the project) have been considered to be those which will happen due to installation of solar PV power generators during implementation phase of the project. This is in line with the definition of direct GHG emission reductions per GEF guidelines which are those which happen due to investments made by GEF or leveraged as a part of the project. The baseline considerations at the time of project design, which were the basis for projections of GHG emission reductions, are provided in Table 14 below.

**Table 14: Baseline Assumptions to compute GHG mitigation due to the project**

|  |  |  |
| --- | --- | --- |
| Emission Factor | 1.14 | Tons CO2 / MWH of Power Generation |
| Installed Capacity | 3 | MW |
| *PV System Characteristics* |
| Area per kW (Sq. M) | 7 |  |
| PV efficiency (%) | 15% |  |
| De -rating ratio | 0.75 |  |
| Global Average Solar Radiation | 5.41 | kWh / Sq. M / Day |
| Daily Power generation | 4.2604 | kWh / KW / Day |

The emission factor of 1.14 was used assuming that in the absence of the project; the corresponding demand for electricity would be met by coal based power plants. This assumption does not seem reasonable, as it presumes that when renewable source based solar PV power will be available, the fossil fuel based power plant which would be discarded would be coal based. Further as per normal practice of conservativeness to compute GHG emission reductions it is suggested to use grid emission factor.

At the time of project design, indirect GHG emissions of 350,000 tons of CO2 were projected considering a GEF causality factor of 80%. GEF methodology for computation of indirect reductions in GHG emission[[22]](#footnote-22) due to the project allows for computation for maximum ten years post implementation of the project. GEF causality factor is used to correct the 10-year potential of GHG emission reductions by the “baseline shift,” i.e., that part of the potential that would have been tapped by the market without a GEF intervention. The GEF causality factor describes how much of the emission reduction can be attributed to the GEF intervention, and how much would have happened in the business-as-usual scenario in the long-term. In the case of “Grid Connected Solar PV project in Mauritius”, GEF causality factor (of 80%) at level 4[[23]](#footnote-23) is considered to be appropriate. This is because in Mauritius, feed in tariff support for solar PV is a very important contributor, due to the cost difference between generation using Solar PV technology and fossil fuel based technologies. Indirect GHG emission reductions of 350,000 tons of CO2, would correspond to creation of additional Solar PV capacity of about 10 MW over a period of 10 years after the GEF project, which seems reasonable.

A far as GHG emission reductions is concerned, the situation at the time of MTE is much different then what was envisaged at the time of project design. The project would be supporting solar PV capacity of about 10.99 MW against the originally envisaged capacity of 3 MW. The PV installations being supported by the project are given in the Table 15 below.

**Table 15: Solar PV installations supported by the project**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No**  | **Project name**  | **Capacity**  | **Expected date of Commissioning[[24]](#footnote-24)** | **Type of support**  |
| 1  | Petite Retraite PV Farm  | 2 MW | 22 March 2016 | Feed in Tariff Support |
| 2  | L’ Esperance PV Farm  | 2 MW | 22 March 2016 | Feed in Tariff Support |
| 3  | Fuel PV farm  | 2 MW | 28 July 2016 | Feed in Tariff Support |
| 4  | La Gaulette PV farm  | 2 MW | 28 July 2016 | Feed in Tariff Support |
| 5 | Harell Mallac  | 2 MW | 28 May 2016 | Feed in Tariff Support |
| 6 | Agalega Green Project | 70 KW | Not Known | Capital Subsidy of USD 100,000 |
| 7 | Rodrigues Regional Assembly Building | 10 KW | August 2015 | 50 Percent Capital Subsidy |
| 8 | MITD Building, Rodrigues | 5 KW | August 2015 | 50 Percent Capital Subsidy |
| 9 | Fisheries Building, Rodrigues | 5 KW | August 2015 | 50 Percent Capital Subsidy |
| 10 | Jean Lebrun Government (Primary) School[[25]](#footnote-25) | 5 KW | 2012 | Capital Subsidy |
| 11 | La Tour Koenig State Secondary School | 5 KW | 2012 | Capital Subsidy |
| 12 | D. Ramphul State Secondary School | 5 KW | 2012 | Capital Subsidy |
| 13 | R. Gujadhur State Secondary School | 5 KW | 2012 | Capital Subsidy |
| 14 | Rivière du Rempart State Secondary School | 5 KW | 2012 | Capital Subsidy |
| 15 | F.Boyer de la Giroday State Secondary School | 5 KW | 2012 | Capital Subsidy |
| 16 | Forest side State Secondary School (Boys) | 5 KW | 2012 | Capital Subsidy |
| 17 | Willoughby Government School | 5 KW | 2012 | Capital Subsidy |
| 18 | Palma State Secondary School | 5 KW | 2012 | Capital Subsidy |
| 19 | La Gaulette State Secondary School | 5 KW | 2012 | Capital Subsidy |

Apart from the solar PV installations in schools given at serial number 10 to 19 above (as mentioned in the project document), the SSDG scheme of the government supported installations of solar PV at a number of other institutions (please see Annex E).

Due to project delay, most of the solar PV capacity being supported under the project will get commissioned towards the end of the project. Hence there will be no contribution towards direct GHG emission reduction during the project. However, the benefit of direct GHG emission reductions post project will be realized to the full extent. Although the project design envisaged support to 3 MW of solar PV capacity, the capacity eventually being supported is of the order of 10.99 MW (including the schools and other institutions supported under the SSDG scheme). Assuming that the power generated from these solar PV facilities would come from the generators connected to the grid, direct GHG emission reductions due to the project, after implementation of the project has been determined to be about 250,000 tons of CO2. This is based on the following considerations:

* GEF causality factor at level 4 (80%)
* Grid emission factor of 0.914[[26]](#footnote-26) ton of CO2 / MWH for the grid at Mauritius. The grid emission factor at Rodrigues is much lower at 0.60[[27]](#footnote-27) tons CO2 / MWH. For Agalega there is no grid and the electricity needs are met by diesel oil based generators. However, even for Rodrigues and Agalega emission factor of 0.914 tons of CO2 / MWH has been considered. This is for the sake of simplicity and considering that the share of PV facilities at Rodrigues and Agalega in the total GHG emission reductions would be significantly lower (given lower solar PV capacities)
* Benefits of direct GHG emission reduction for the entire life of 20 years for solar PV facilities.

As can be seen there is a significant variation in the figures of direct GHG emission reductions due to the project. This variation is due to the increase in the capacity of solar PV facilities (from 3 MW to 10.99 MW) and due to the difference in the value of emission factor (from 1.14 at the time of project design to 0.914 at the time of MTE).

As far as indirect GHG emission reduction due to the project is concerned, as per the long term energy strategy 2009-2025, the target for grid connected PV is about 8-10 MW to be achieved towards the end of the year 2025. Thus, the target of grid connected solar PV for next ten years has already been achieved due to the project. However, overall energy strategy for Mauritius is presently being reviewed and scope for renewable energy is an important part of this review process. MEPU has already awarded a consultancy assignment for review of overall energy strategy and plan for Mauritius (please see Foot Note 14). For the purpose of determining indirect reduction in the emission of GHG due to the project, it is considered that this project will facilitate creation of additional solar PV capacity of the order of 10 MW over next 10 years. Accordingly indirect GHG emission reduction due to the project has been estimated to be about 63,000 tons of CO2.

In view of the GHG emission reductions due to the project, the GEF Tracking Tool at the time of MTE has been updated and is being submitted separately. Snapshot of the tracking tool is given in Annex F.

* + 1. *Other impacts*

UNDP / GEF project has been instrumental in establishment of grid connected solar PV technology based power generation facilities in Mauritius. The project has been able to create capacity of about 10 MW, which is the target for the year 2025. This became possible as the project supported, as feed in tariff, the cost difference between procurement of power from the fossil fuel based power plants and from solar PV plants. Although the cost of power generation using solar PV technology has come down (due to general trend of reduction in the capital cost of solar PV and fiscal measures by the government like reduction in VAT, no land use conversion charges etc.) there is still a difference in the cost of generation using solar PV technology and other fossil fuel based technologies. Thus, any further capacity addition would still require the feed in tariff support or other matching fiscal incentives.

The most direct projected impact of the project in terms of global environmental impacts was reduction in the emission of GHG. In-spite of start-up delays the project could deliver some of its expected outcomes due to the pro-active approach by CEB to engage in the project related activities in the absence of any systematic project activities.

# Findings: project implementation and Adaptive Management

This Chapter describes the appropriateness and functioning of project management and administration, work planning and monitoring and evaluation. A second section reviews relations with stakeholders, while the Chapter ends with an overview of planned and realized budget expenditures and co-financing.

## Adaptive management and planning; monitoring & evaluation

**Mid-term review questions (see Annex B)**

|  |
| --- |
| * *Management:* Appropriateness of the institutional arrangement and whether there was adequate commitment to the project? Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision- making transparent and undertaken in a timely manner? Recommend areas for improvement; Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement; Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement
* *Work planning*: Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved; Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?; Examine the use of the project’s results framework/log frame as a management tool and review any changes made to it since project start.
* *Reporting:* Assess how adaptive management changes have been reported by the project management and shared with the Project Board; Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?); Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.
* *Communications:* Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results? Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?);
* *M&E:* Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive? Examine the *financial management* of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?
 |

* + 1. *Management*

The project design has provided for a structured management arrangement. UNDP has the responsibility of the budget holder under the NEX execution modality. The executing agency for the project was the Ministry of Energy and Public Utility (MEPU). As MEPU could not make any progress towards implementation of the project for 2 ½ years, execution of the project was delegated to CEB.

The project design provides for a full time project manager and a full time project assistant to manage the project. Initial delay towards implementation of the project was due to failure to recruit the project manager despite four attempts by MEPU. Presently, there is still no dedicated project manager to take care of the project. The responsibilities of the project manager and the project assistant have been assigned to two full time regular CEB employees, who devote part of their time to carry out project related work. As a result, the desired level of dedication is at times lacking. The current arrangement has worked as far progress towards implementation is concerned, but it is not as effective as planned in the original design.

Project implementation has responded to changing conditions and risks, and taken advantage of opportunities for partnerships and actions that support the overall project objective. The main example of adaptive management and flexibility is the reformulation of the project results (outputs and activities) at the time of project inception, to take into account the changed situation and the activities happening or at the planning stage (such as the MSDG study with support from WB, Study on long term energy strategy with support from AFD).

Management arrangements are in place in terms of a project team comprising of a National Project Director, a Project Manager and a Project assistant. A Steering Committee is in place and provides guidance to the Management team for the project. . However, it is advisable to have an additional full time dedicated resource person at the level of project assistant, in order to help in expediting administrative matters. Overall, the management of the project is rated as **Satisfactory.**

* + 1. *Work planning*

Work planning is being done as per the provisions in the project design document. Work plan for the first year was finalised at the time of inception meeting. The work plan for the year 2015 is already in place. In accordance with the requirements, the work plans are prepared by the project manager, reviewed by the National Project Director and approved by the steering committee after deliberations. The work plans are further elaborated in quarterly work plans. Work planning is carried out keeping in mind the log-frame in terms of timelines and the targets. Suitable changes have been made in the work plan in line with the changes made in the log-frame at the time of inception. One of the issues with the work planning is that the activities have not been planned for each of the outcomes and output. For example the activities being planned against Outcome 5 are not very clear in terms of a proper strategy to achieve the outputs for this Outcome. During interactions with the project team it was pointed out that due to delay in the start of the project and considering the resulting compressed time frame there is a need to prioritise work and activities for some of the components (outcomes) of the project. The project team proposed to focus attention towards the unattended components (outcomes), during subsequent work plans in case an extension is granted to the project timelines. Work planning is rated as **Moderately Satisfactory**.

* + 1. *Reporting*

A key reporting requirement, the inception report, which documents the agreed work plans and other arrangements, was prepared in May 2014 and shared with the stakeholders. The inception report documents the agreed changes in the baseline, the log-frame and the work plan. PIR for the project were prepared for the year 2013 and 2014. The implementation delay mentioned in the PIR of 2013 was addressed by the executing agency and the implementing agency by making interim arrangements for managing the project in the absence of a full time project manager team.

The quarterly progress reports and annual progress reports are prepared and shared in accordance with UNDP / GEF requirements. The quarterly reports however do not report the details of the tasks carried out during the reporting period, and do not cover the co-financing aspects. The reporting aspect of the project management has been rated as **Moderately Satisfactory.**

* + 1. *Communications*

Communication is one of the aspects of the project management which is clearly lacking, and there are no formal or informal communication channels in place either for internal or external communications. While prioritising implementation of the components of this process, the component pertaining to outreach did not receive proper attention.

The project management team mentioned that as outreach and awareness creation activities are now being planned, these aspects pertaining to external and internal communications would be taken care along with the work plan for outreach and awareness creation activities. The communications aspect of the project management has been rated as **Moderately Unsatisfactory.**

* + 1. *M&E systems*

In line with the standard practice for GEF projects, provisions were made in the project design for Mid-term review and a terminal evaluation. Provisions were also made for periodic financial audit.The main M&E activities planned at the design stage meet GEF and UNDP requirements and standard practices.

Quarterly progress reports and annual progress reports are prepared as per the M&E plan and were made available during the MTE. The monitoring reports do not cover the co-financing aspects. As per the requirements of M&E in the project design, an audit of the accounts of the project was carried out for the period 1 January 2012 to 31 December 2014. The audit has been restricted to the expenditure through UNDP and do not cover co-financing in cash or in kind.

.

Financial monitoring and evaluation of the project is to be carried out using the ATLAS tool of UNDP, which generates reports such as the CDR to gauge the level of delivery on all the outcomes of the project.As the details of co-financing is not captured and entered in the Atlas Tool, the CDR do not provide any information regarding the co-financing. It is suggested that the co-financing aspect of the project be monitored and reported regularly.

UNDP is represented on the project steering committee to ensure its overall accountability for the project results. UNDP has fulfilled its oversight and supervision responsibilities. The monitoring and evaluation budget provisions in the project are adequate. The Monitoring and Evaluation aspects of project management are considered as **Satisfactory**.

## Stakeholder engagement

**Mid-term review questions (see Annex B)**

|  |
| --- |
| * *Project management:* Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
* *Participation and country driven processes:* Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
* *Participation and public awareness:* To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?
 |

Stakeholder engagement is one of the weak areas. The only formal platform for engaging the stakeholders is the Steering Committee (SC). The SC has representatives from different concerned ministries and departments but representation / participation is at a fairly low level. This is evident from the fact that SC meetings are attended by Intern level persons from concerned ministries. During the last SC meeting (held in February 2015) a number of members did not attend the meeting. SC does not have members from civil society, NGO, research institution, development agencies, trade & industry bodies and academia.

The opportunities to engage the stakeholders are further hampered due to absence of any outreach and public awareness and communications activities. However, considering that the SC meetings are happening regularly and that activities have been planned, stakeholder’s engagement at an aggregate level has been rated as **Moderately Satisfactory**.

## Budget and co-financing

**Mid-term review questions (see Annex B)**

|  |
| --- |
| * Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
* Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
* Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
* Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?
 |

The project budget and sources of funds[[28]](#footnote-28) for the project document are summarized in Table 16 below:

**Table 16: Project Budget and Sources of Funds**

|  |  |  |
| --- | --- | --- |
| **Source** | **Amount (USD)** | **Comments[[29]](#footnote-29)** |
| GEF  | 2,005,000 | Out of this USD 1,300,000 were for providing feed in tariff support to selected solar PV installations (under Outcome 4 of the project) |
| UNDP | 50,000 | Towards project management |
| MID Fund (Cash) | 1,080,000 | This largely pertains to provision of feed in tariff support to selected solar PV installation (Outcome 4 of the project) |
| Government (Cash) | 80,000 | For project management activities |
| Government (In Kind) | 278,000 | In kind contribution by MEPU towards different components / outcomes of the project |
| Private Sector | 17,500,000 | Investments to be made by private sector entrepreneurs for establishing solar PV facilities |
| **TOTAL**  | **20,993,000** |  |

As mentioned in the Project Document, apart from the commitments given in the above Table 16, the Government had committed funds to support installation of solar PV in schools for creating awareness etc., under its SSDG (Small Scale Distributed Generation) scheme. Although funds to support implementation of SSDG scheme has not been mentioned in the project document, PIR for the year 2013 has reported USD 4.5 million spent by the government on SSDG scheme as co-financing by the government.

As can be seen from the Table 16 above, GEF funds amounting to USD 1.3 million were meant for providing feed in tariff support to solar PV facilities of about 3 MW capacities. Due to fall in cost of generation of power using solar PV technology the project has been able to provide feed in tariff support to much larger capacity of 10 MW. This has led to significant increase in the private sector co-financing. During inception of the project, part of the GEF funds for providing Feed in Tariff support were reallocated to Agalega Green Project (USD 100,000) and to Rodrigues Regional Assembly (USD 45,000) to ensure participation of Rodrigues and Outer Islands in the project. UNDP has committed GEF funds to provide feed in tariff support to the projects beneficiaries for a period of 19 months from the date of commissioning of the projects. An amount of USD 0.5 million has already been transferred to a separate project account maintained by CEB to provide feed in tariff support.

As mentioned previously, none of the monitoring documents has reported the co-financing aspects of the project. However, based on information provided by the project team the position of financing and co-financing as on 31st March 2015 is assessed as given in Table 17 below:

**Table 17: Project Budget, Financing and Co-financing (Million USD)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Source** |  | **Planned** | **Planned till Mid Term[[30]](#footnote-30)** | **Reallocated Project Budget** | **Realised Till****Dec 2014** | **Likely Future** | **Likely Total** |
| GEF  | Feed in Tariff Support | 1.300 | 0.260 | 1.000 | 0.500 | 0.500 | 1.000 |
| Agalega PV Project | Nil | Nil | 0.100 | Nil | 0.100 | 0.100 |
| Rodrigues PV Projects | Nil | Nil | 0.045 | Nil | 0.045 | 0.045 |
| Demonstration PV projects at Schools and other institutions | Nil | Nil | Nil | Nil | Nil | Nil |
| Other | 0.705 | 0.517 | 0.860 | 0.099 | 0.761 | 0.860 |
| **Total** | **2.005** | **0.777** | **2.005** | **0.599** | **1.406** | **2.005** |
| UNDP |  | 0.050 | 0.026 | 0.050 | Nil | 0.050 | 0.050 |
| Co-financing, MID Fund[[31]](#footnote-31) (Cash) | Feed in Tariff Support | 1.080 | 0.216 | 1.080 | Nil | 1.080 | 1.080 |
| Agalega Green Project | Nil | Nil | 0.028[[32]](#footnote-32) | Nil | 0.028 | 0.028 |
| Rodrigues PV Projects | Nil | Nil | 0.045 | Nil | 0.045 | 0.045 |
| Demonstration PV projects at Schools and other institutions | Nil | Nil | Nil | 0.451[[33]](#footnote-33) | Nil | 0.451 |
| Other |  |  |  |  |  |  |
| **Total** | **1.080** | **0.026** | **1.405** | **0.451** | **1.405** | **1.856** |
|  | 0.080 | 0.040 | Nil | Nil | Nil | Nil |
| Co-financing, Government (Cash) |  | 0.278 | 0.159 | 0.278 | 0.048[[34]](#footnote-34) | 0.229 | 0.278 |
| Government (In Kind)[[35]](#footnote-35) |  | 17.500 |  | 17.500 | 0.150 | 26.600 | 26.600 |
| Private Sector |  | **20.993** | **1.002** | **21.188** | **0.797**[[36]](#footnote-36) | **29.640** | **30.288** |

With the initial delay towards project implementation some of the planned activities were scrapped either because they were not justified any more or because there were projects being implemented by other donor agencies having overlapping activities with this project. The budget for such activities was reallocated for more relevant activities. While doing so the guiding principle of co-financing was adhered to.

The cost effectiveness of the GEF funding is viewed in terms of direct and indirect GHG emission reductions and in terms of quantum of co-financing leveraged. With GEF contribution of USD 2.005 million the project would lead to direct GHG emission reduction of about 249,900 tons of CO2. This works out to about USD 8 per ton of CO2. GEF funds would be leveraging co-funding to the extent of 15 times, which is quite reasonable. Budget utilisation at the time of MTE is lagging behind. It is clearly due to late start of the project. Budget utilisation of the project is expected during the rest of implementation period. Budget utilisation and co-financing aspects of the project are rated as **Moderately Satisfactory**.

Based on the ratings above for the different aspects, Implementation and Adaptive Management has been rated as **Moderately Satisfactory**.

# Findings: Sustainability

**Mid-term review questions (see Annex B)**

|  |
| --- |
| * Whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
* *Financial*: What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project’s outcomes)?
* *Socioeconomic*: Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?
* *Institutional*: Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits?
* *Environmental*: Are there any environmental risks that may jeopardize sustenance of project outcomes?
 |

## Project risks

At the design stage a thorough risk analysis was carried out and appropriate risk mitigation strategies were worked out. Annexure 2 of the project document gives an overview of risks identified at the time of project design.

Internal risks are project-inherent or can be controlled by the project management, while external risks are of policy-economy-international nature. Many risks are related to the “barriers” and one can argue that some of the ‘risks’ the Project might face imply inability to lower corresponding “barriers” substantially, thus negatively affecting the likeliness of “sustainability” of the project’s interventions. The critical “assumptions” then are that the “internal risks” (i.e. risks that can be mitigated or managed by Project management), and ‘external risks’ have a low incidence and/or impacts, in such a way that sustainability remains (moderately) likely. The quality of adaptive management (mentioned in Section 6.1) is determined by the mitigation response of Project management to these external and internal risk factors as these manifest themselves more intensely and/or more frequently than expected.

One of the important risk factors not covered in the mid-term evaluation questions is the technology risk. Technology risk has been adequately addressed in the project design with provisions of manpower training, technology transfer etc.

Project design has identified technical risks which included lack of technical information and knowledge, and skills to design and implement of grid PV projects. There were adequate provisions to train human resources and facilitate technology transfer to take care of the technology risks. However, the lack of reliable solar radiation data could not be addressed till now, despite the provisions in the project design. Other components of the projects pertaining to technology (technology transfer etc.) also could not get implemented as designed. These risk factors did not prevent the project implementation largely due to the private sector participation. Due to participation of private sector market forces come into play to address the barriers and risks as and when there is a business opportunity. Participation of private sector in the competitive bidding process has ensured that cost efficient solar PV technologies get adopted in Mauritius. This clearly demonstrates that recourse to market forces is one of the reliable strategies to take care of technology risks.

When these solar PV facilities will be operational, there could be a technology risk of non-availability of skilled man power for operation and maintenance of the solar PV systems. This has been taken care by providing of training, creating a pool of skilled man power. Another technology risk is that the actual performance of solar PV power generation facilities does not match the projected performance at the time of bidding. This can happen, either due to poor quality of the solar PV panels or due to inaccuracies in solar radiation data. Other reasons could include failure to upload the power to the grid due to constraint of capacity or other technical reasons at the point of uploading of power. However, it is considered that some of these risks would have been addressed by the beneficiaries by way of contractual arrangements with the suppliers of Solar PV equipment. At an aggregate level technical risks to sustainability of the project are considered as low.

## Financial risks to sustainability

The strategy of the project is to create investment in solar PV by providing fiscal incentive by way of feed in tariff support and an enabling environment to attract further investment. Fiscal incentives to selected solar PV facilities are being provided to taken care of the difference between the price (determined by competitive bidding process) at which PV technology based independent private producers are willing to supply electricity and the current marginal cost of power generation at CEB. The feed in tariff support is to be provided for the entire life time (20 years) of the facilities. Part of the feed in tariff support will be provided by the project using the GEF funds and part by the government (through MID Fund). The financial risk to sustainability in this case is the continuity to availability of funds once the GEF funds are utilised. .

The government has committed to provide feed in tariff support by using MID Fund. Since December 2014, the MID Fund, which was being managed by MOESD, has been abolished. The government however, remains committed to provide the feed in tariff support to solar PV projects. Funds will now be provided to CEB directly by MOFED through budgetary provisions. During interactions with MOFED it was gathered that the ministry has allocated sufficient funds to provide feed in tariff support to solar PV facilities, including the solar PV facilities created earlier under the SSDG scheme.

One of the financial risks is the variation in the quantum of funds required to provide the feed in tariff support. Such variations can happen due to any variation in the prices of fossil fuels, currency exchange rate, and the capital cost of solar PV etc. In this regard the risks to financial sustainability relate to continued availability of funds to support the beneficiaries of UNDP / GEF projects and provision of such support to more solar PV units in future. Continuation of support to the beneficiaries is assured as firm and legally enforceable power purchase agreements are in place, and the government remains committed to provide such support. Regarding support to future solar PV facilities, quantum of required support is likely to reduce further due to the downward trend in the solar PV capital cost, thereby facilitating support to more such units. **Financial sustainability of the project is assessed to be likely**.

## Socio-economic risk to sustainability

Thanks to the SSDG scheme which was implemented by the government during 2010-14, there was significant level of awareness in the general public about Solar PV technology. However, there is still lack of awareness regarding megawatt scale solar PV technology based power generation facilities in terms of resources and other facilities it will require (e.g. land). Thus, it is still not clear how the civil society will react to it.

Due to fast growth of Solar PV (largely roof top based small sized) installation in Mauritius since last four-five years, the demand for skilled manpower to operate and maintain such installations has increased. In the short run, this can directly affect project implementation (e.g. delays in recruiting project staff or major escalation in remuneration rate of project staff or consultants, placing pressure on project budgets). This has been addressed in the project by having a component pertaining to training of manpower. At this mid-point in project implementation, we consider the **socioeconomic sustainability as likely.**

## Institutional framework and governance risks to sustainability

Institutional framework for implementation of renewable energy projects at Mauritius is largely embedded to two different institutions namely MEPU and CEB, while for provision of fiscal incentives the MOFED gets involved. It was identified at the project design stage that there are some overlapping in the respective jurisdictions, roles and responsibilities of MEPU and CEB. The project intended to correct this situation by developing an overarching strategy document on grid-connected PV electricity generation and sharpening the focus of the respective roles and responsibilities of MEPU and CEB (Outcome 1). However, due to delay of the project, this aspect has not been prioritised to be dealt with, till the time of MTE. This continues to pose institution framework and governance risks to the sustainability of the project.

Considering that the Government of Mauritius is committed to promotion of renewable sources of energy and that this showcases the commitment of Mauritius towards addressing the global problem of climate change, it is expected that in case such issues do come up they will be taken care at the highest level in the government and will get resolved. From the view point of Institutional framework and governance risks, the sustainability of the project is **Moderately Likely.**

## Environmental risks to sustainability

There are practically no negative environmental impacts of the project, other than some minor impacts due to change in the land use pattern. There is a remote possibility of the need to chop off the trees and other vegetation in some isolated cases to prevent shading on the solar PV panels.

In accordance with the procedure for all the industries in Mauritius the solar PV based power generation facilities would need to have an EIA carried out and seek clearance from the Ministry of Environment. There is a minor risk of environment related issues blocking solar PV projects. From the view point of environmental risk sustainability of the project is **Likely**.

# Conclusions and recommendations

## Conclusions

**Mid-term evaluation questions (see Annex B)**

|  |
| --- |
| * + Identify remaining barriers to achieving the project objective in the remainder of the project, and by reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits
	+ MTE Ratings & Achievement Summary Table will be provided, summarizing the ratings on a) results, b) implementation and adaptive management, 3) sustainability with a short description of the rating’s justification
 |

### Summary of main findings and of ratings

The following Table provides a summary of the ratings for;

a) Progress towards Results

b) Project Objectives

c) Implementation and Adaptive Management and

d) Sustainability.

**Table 18:** **Mid-term evaluation ratings and achievements summary**

| **Main criteria** | **Rating[[37]](#footnote-37)** | **Explanation** |
| --- | --- | --- |
| **Project Strategy** | NA | The objective of the project is to increase the uptake of solar PV at Mauritius. The strategy of the project is centred on removing the technical, regulatory and financial barriers. The strategy has five different components, with each of the component targeted specifically at a set of barriers. The underlying assumption that the removal of barriers will lead to higher uptake of solar PV has proven to be correct when seen in the present day context. The project is in line with the priorities of the country for the power sector. One of the objectives of the project is reduction in emissions of GHG, is in line with the stated position of Mauritius on the issue of climate change. Although the project is targeted at Solar PV, the outcomes will also benefit other renewable sources of energy. |
| **Progress towards results** |  | Indicator wise, the project has significantly overachieved. However, it is considered that the indicator used (creation of solar PV capacity under the project) does not adequately represent removal of barrier. At the MTE, PPAs for 10 MW solar PV capacities are in place (against the target of 3 MW). However rating for achievement of project objectives has been made considering the progress towards achievement (and the ratings) for different Outputs of the projects.  |
| **Project Objective** | MS |
| **- Outcome 1** | MS | This outcome largely pertains to creation of regulatory framework to create transparency, easy and speedy consulting approval processes etc. Achievements against this Outcome have been largely due to the pro-active approach of CEB (to engage with private sector PV operators and with WB for consulting on MSDG) in the absence of any planned activities under the project for quite some time. Considering that some of the Outputs are not on track and unlikely to be achieved during the project implementation timelines, progress towards achievement has been rated as Moderately Satisfactory.  |
| **- Outcome 2** | S | This Outcome addresses the financial barriers through capacity building of financial institutions / key government officials to appraise investment propositions and formulate incentives to attract investors.During the period of initial delay, CEBs followed a pro-active approach and engaged a consultant to carry out the assignment on MSDG. This helped towards achieving some of the output set against this Outcome. For other outputs a RFP has been issued to appoint a consultant. The likely completion date of this consulting assignment is July 2015. The outcomes of this component have been achieved or are on track to be achieved during rest of the implementation period. |
| **- Outcome 3** | MS | This component / Outcome is targeted at removal of technical barriers by developing the energy resource mapping, facilitating technology transfer, creation of technical standards for PV and grid connection systems, and capacity building.No specific activities have been carried and activities are planned during rest of the project implementation period. However, two of the outputs of this component were achieved as a part of study on MSDG led by WB and partially supported by this project. RFP has been prepared to award consulting for resource assessment and preparation of solar maps.  |
| **- Outcome 4** | S | This component targets investment barriers (financial barriers) by providing feed in tariff support to demonstration projects, and also barriers such as lack of awareness and technology.The progress against this Outcome is satisfactory as PPAs have been signed with promoters of solar PV facilities aggregating to capacity of 10 MW (against target of 3MW in the project document) |
| **- Outcome 5** | MS | This component is targeted at the barrier of lack of awareness. It also is intended to multiply the benefits of the project by dissemination of the project experience / best practices etc.Due to priority to implement other components of the project to make up for initial delay, no work has been carried out for this component till the time of MTE. However, activities are now planned and scheduled during rest of the of project implementation period.  |
| **Implementation and adaptive management** | MS | As and when needed, project team has responded to changing conditions and risks, to take advantage of opportunities for partnerships and actions that support the overall project objective. One of the issues with the work planning is that the activities have not been planned for each of the outcomes and output.Quarterly progress reports and the annual progress reports are prepared and shared in accordance with UNDP / GEF requirements. The quarterly reports however do not report the details of the tasks carried out during the reporting period.Communication is one of the aspects of the project management which is clearly lacking. There are no formal or informal communication channels in place for internal or external communicationsQuarterly progress reports and annual progress reports are prepared as per the M&E plan and were made available during the MTE. The monitoring reports do not cover the co-financing aspectsStakeholder engagement is one of the week areas, and the only formal platform for engaging the stakeholders is the steering committee.Budget utilization and co-financing of the project are lacking but are likely to be made up during the remaining implementation period. |
| **Sustainability** | L | The solar PV projects being supported under the projects are likely to continue receiving the feed in tariff support for their life time as PPAs have been signed and budget allocations have been made by the government. No political, social economic or environment risks are envisaged for the project |

### Conclusions

The achievements of the project till the time of MTE is largely attributable to the pro-active actions by CEB to engage with private sector towards creation of grid connected solar PV facilities and the consulting assignment to Mercados for MSDG. The project has been instrumental in the establishment of grid connected solar PV technology based power generation facilities at Mauritius. The project has been able to create capacity of about 10 MW, which is the target capacity by 2025 for solar PV as per the strategy of the government. This became possible as the project supported the difference in tariff between the fossil fuel based power plants and the cost of procurement of power from solar PV plants.

Although the cost of power generation using solar PV technology has come down (due to general trend of reduction in the capital cost of solar PV and fiscal measures by the government like reduction in VAT, no land use conversion charges etc.) there is still a difference in the cost of generation using solar PV technology and other fossil fuel based technologies., In view of this gap, any further capacity addition would still require the feed in tariff support or other matching fiscal incentives.

The project was intended to remove a number of legal, regulatory and market barriers which hamper realization of the potential of solar energy for on-grid electricity generation. The project has succeeded to do so partially. Some barriers of technology (availability of solar resource data), financial (need to support by fiscal incentives due to viability gap), regulatory (long time required to get clearances) still remain. Some of the remaining barriers will get addressed during the remaining implementation period. However, in order to achieve the planned objectives, outputs and outcomes of the project, an extension of time would be required. We conclude that the Project has been instrumental in lowering many of the barriers

## Recommendations

**Mid-term evaluation questions (see Annex B)**

|  |
| --- |
| * Corrective actions for the design, implementation, monitoring and evaluation of the project
* Actions to follow up or reinforce initial benefits from the project
* Proposals for future directions underlining main objectives
 |

1. *Time Extension till end of 2016 to complete project*

There was delay of about two and half years in the start of the project. Due to this reason most of the outcomes and outputs of the project will not be achieved by the scheduled end of the project in September 2015. This is despite significant progress has already been made towards achievement of results. Notable results which can be achieved during the recommended extension of time is creation of ‘Solar Map’, operationalisation of solar PV facilities being supported under the project, disbursement and monitoring of utilization of feed in tariff support provided to the beneficiaries, formalisation of regulations based on the recommendations of the consultants etc.

1. *Recruitment of a full time Project Assistant, to provide support to accelerate the implementation of the project*

Start of the project was delayed due to persistent failure to recruit a project manager by MEPU. Presently project management has been entrusted to full time staff members of CEB who maintain their regular job responsibilities. Due to lack of dedicated man-power some of the project management activities such as the preparation of work plans, co-ordination, stakeholder consultations etc. at times take a back seat. It is recommended that UNDP recruits a project assistant to provide dedicated support to the project team.

1. *Easier environmental clearance procedures for solar PV plant projects*

Current regulations require Solar PV plant projects to undergo a complete EIA in order to obtain a formal environment clearance, which is quite time consuming. It is recommended that an outcome be added to examine the possibility of having faster environment clearance procedures (without compromising environment integrity). One possibility which may be examined in this regard is to have recourse to a PER (Preliminary Environmental Review) instead of a full EIA.

1. *Initiate activities related to outreach and communication*

Outreach, information dissemination, communications and awareness creation activities have not yet been taken up yet. Considering that such activities have a multiplier effect towards achievement of the objectives and the results, it is recommended that dedicated efforts be made towards this component (Outcome 5) of the project.

1. *Follow up activities for acceptance of recommendation of consultants for regulations*

Consultants were appointed to suggest policy, legal and regulatory measures for solar PV sector. As the consultants have submitted their report, the work progress reports shows the activities of regulatory measures as completed. It needs to be appreciated the indicators on achievement were not completion of studies, but regulations in place. The SC should follow up regularly with Government on the recommendations by the consultants to ensure issuance of the required regulatory measures.

1. *Monitor and report of co-financing*

Presently there is no mechanism to monitor record and report co-financing to the project. It is recommended that procedures be developed for the Project Team to monitor record and regularly report co-financing to the project.

1. *Organize Capacity building for private sector and financial personnel.*

To promote private sector investment, awareness creation, capacity building, training of private sector personnel plays an important role. Applying such measures to the lending institutions has multiplier impact. It is recommended that officials of the private sector and financial institutions be closely involved while creating awareness and capacity building.

1. *Technical training for grid connectivity at higher voltage*

Under the SSDG program run by the government prior to this project, training courses were carried out to ensure availability of trained manpower. However, small scale PV systems are connected to the grid at lower voltage. As medium scale and large scale solar PV facilities are connected to the grid at higher voltage, it is recommended that appropriate training courses be organized in this field.

1. *Solar Resource Mapping*

Deployment of Pyranometers at different locations to collect data and subsequent preparation of the solar map is a time consuming process. In order to optimally utilize the available resources and time it is recommended that the possibilities of collaborating with University of Mauritius be explored (regarding RFP being developed for Output 3.1).While interacting with the University of Mauritius personnel during the mission, it was leant that the University is already carrying out relevant research work on the assessment of solar resources.

1. *Explore Green Climate Fund to provide fiscal incentives to future PV installations*

In the foreseeable future, the cost of generation of electricity, using solar PV technology is unlikely to be at par with the cost of generation with other fossil fuel technologies. Thus, it would be necessary to continue to provide fiscal incentives for future PV installations as well. Such incentives may be provided as feed in tariff support or through other fiscal measures (grants, subsidies, interest rate draw down support etc.). It is recommended that possibilities to obtain financial support for such measures from the ‘Green Climate Fund’ be explored.

1.
2. Terms of reference

**UNDP-GEF Midterm Review PIMS 4333 – Removal of Barriers to Solar PV Power Generation in Mauritius Rodrigues and Outer Islands - Terms of Reference**

1. **INTRODUCTION**

This is the Terms of Reference (ToR) for the UNDP-GEF Mid-Term Review (MTR) of the full-sized project titled ‘Removal of Barriers to Solar PV Power Generation in Mauritius, Rodrigues and the Outer Islands’ (PIMS 4333) implemented through the Central Electricity Board (CEB) as delegated by the Ministry of Energy and Public Utilities, which is to be undertaken in 2015. The project started on the 20th of October 2011 and is in its Second year of implementation, considering that the Inception workshop was carried out in April 2014. This ToR sets out the expectations for this MTR. The MTR process must follow the guidance outlined in the document Guidance For Conducting Mid-Term Reviews of UNDP-Supported, GEF-Financed Projects which may be obtained online.

**2. PROJECT BACKGROUND INFORMATION**

The Republic of Mauritius is an island nation off the southeast coast of the African continent in the southwest Indian Ocean, approximately 900 km (560 mi) east of Madagascar. In addition to the island of Mauritius, the Republic includes the islands of Cargados Carajos, Rodrigues and the Agalega Islands totalling a population of 1,277,853 inhabitants (2009). With a per capita income (purchasing power parity) of US$ 12,400, the Republic of Mauritius is one of the best performing economies in Africa. The main islands of Mauritius and Rodrigues (population of 35,000) are fully connected to the Central Electricity Board electricity grid. Electricity generation in the Republic is highly dependent on fossil fuels.

The Central Electricity Board, a parastatal body wholly owned by the Government and established in 1952, has responsibility under the Central Electricity Board Act of 25 January 1964 to "prepare and carry out development schemes with the general object of promoting, coordinating and improving the generation, transmission, distribution and sale of electricity" in Mauritius. It presently generates approximately 46% (Chart 1) of the country's total power requirements from its 4 thermal power stations and 9 hydroelectric plants, including the fully automated 350 kW hydropower station at La Nicolière that was recently commissioned; the remaining 54% is purchased from Independent Power Producers using a combination of bagasse and imported coal for generation.

Mauritius views the expansion of its electricity generation capacity through the utilisation of renewable energy resources, including grid-connected PV, as central to its longer-term development prospects. The objective is to utilise renewable sources of energy to the maximum extent possible, taking into consideration the grid absorption capacity, thereby reducing its reliance on imported fossil fuel. Hence, this project will promote and accelerate a climate-friendly solution to the energy situation in Mauritius through harnessing its abundant solar radiation for PV-based electricity generation to supply the grid.

The objective of this project is to accelerate sustainable on-grid PV electricity generation in Mauritius by leveraging $ 17.5 million in private sector investment over its four-year implementation period. This, in turn, is expected to generate direct global benefits of almost 13,295 tons of CO2 over the same period and almost 5,318 tons CO2/yr. thereafter in avoided greenhouse gas (GHG) emissions. The project will do this by introducing a conducive regulatory framework that will facilitate private sector participation in supplying the national grid with PV-generated electricity at market-determined prices and assist the Government in closing private sector funded PV investments. It is envisaged that this project will enable Mauritius to meet (and maybe even surpass) its target of 2% of electricity generation from on-grid PV by 2025, as established in its “Long Term Energy Strategy 2009-2025”.

The project’s goal is to reduce GHG emissions by creating favorable legal, regulatory and market environment and building institutional, administrative and technical capacities to promote the utilization of the country’s favorable solar radiation potential for PV grid-connected electricity generation. The objective is to assist the Government of Mauritius in addressing the various barriers with a view to achieving at least 2% of grid-connected electricity generation from PV by 2025, as outlined in the “Long Term Energy Strategy 2009-2025”.

The Ministry of Energy and Public Utilities is the central body responsible for formulating and implementing the Government’s policy in the field of energy. In the specific area of renewable energy, MEPU is entrusted with formulating policy, plans and programmes for the development and utilisation of renewable energy sources and to make proposals for appropriate legislation/regulations that would promote such activities. The Central Electricity Board, responsible for generation (in conjunction with IPPs), transmission, distribution and sale of electricity, operates under the general purview of the Ministry of Energy and Public Utilities (MEPU). MEPU is also entrusted with the formulation and implementation of energy efficiency measures in the country and, as such, is directly responsible for implementing the recently-completed UNDP-GEF project entitled “Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings”.

The ‘Removal of Barriers to Solar PV Power Generation in Mauritius, Rodrigues and the Outer Islands’ project is promoting a market-driven approach to encourage the participation of the private sector to supply the electricity grid in Mauritius with electricity generated from PV systems. In line with GEF requirements, “the emphasis will be upon developing policies and regulatory frameworks that provide limited incremental support to strategically important investments”, such as investment in new power generation capacity in Mauritius through on-grid PV, allowing the country to cope with its increased demand for electricity services in an environmentally and climate-friendly way. During the PPG phase, a co-financing letter for a 6MW plant was received. A total of USD 17 M was mentioned in the project document as planned co-financing. A number of promoters have also shown interest to install utility scale grid PV systems for a combined capacity of 16 MW and cost of $65m.

At project design stage, the Government had plans to install one 5-kW PV system each at 10 educational institutions in Mauritius. Consideration was also to be given to similar projects in Rodrigues and Agalega. The objective of this initiative is to sensitise the young generation of school children to the benefits of sustainable development through the provision of electricity services at these institutions to power lights, laboratory equipment, small appliances, etc. obtained from PV, thereby obviating the need, albeit to a limited extent, to resort to fossil fuel for electricity generation. The Government has solicited the support of UNDP to implement this project and activities to be implemented under the UNDP-GEF on-grid PV barrier removal project will be instrumental in supporting this initiative, especially as they relate to standards in the choice and installation of PV equipment, capacity development for installers, operators and maintenance personnel. Connection of these systems to the grid with the appropriate metering systems will enable the school children to monitor their respective energy generation and export/sale to the grid, especially during times of low “in-house” electricity usage on week-ends and over school holidays. This will be combined with energy efficiency measures that the schools could implement and it is expected that the children will, in turn, be instrumental in “educating” their parents in the rational use of energy, for both the financial and environmental benefits that it provides.

The private sector was considered to have a role to play a key role in project implementation. At the PPG stage, discussions were held with three potential local companies, viz. British American Investment, PV Energy and Outre Mer Energies Renouvelables, that are prepared to invest a total of $ 65 million for on-grid PV electricity generation, on the understanding that the Government formulates and approves feed-in tariffs for capacities more than 50 kW (co-financing letter is provided in Annex G). On the basis of estimated future installation costs of grid-based PV in Mauritius, this investment will likely culminate into a total of at least 16 MW of PV installed, with the minimum installation of an estimated 3 MW completed within the 4-year timeframe of the present project. In addition, discussions were on-going with other potential investors for more grid-connected PV capacities to be installed.

**3. OBJECTIVES OF THE MTR**

The MTR will assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document, and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results. The MTR will also review the project’s strategy, its risks to sustainability.

**4. MTR APPROACH & METHODOLOGY**

The MTR must provide evidence-based information that is credible, reliable and useful. The MTR team will review all relevant sources of information, including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the Project Document, project reports including Annual Project Review/PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based review). The MTR team will review the baseline GEF focal area Tracking Tool submitted to the GEF at CEO endorsement, and complete the mid-term GEF focal area Tracking Tool that must be submitted with the MTR.

The MTR team is expected to follow a collaborative and participatory approach, ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), the UNDP Country Office(s), UNDP-GEF Regional Technical Advisers, and other key stakeholders.

Engagement of stakeholders is vital to a successful MTR. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to executing agencies, senior officials and task team/ component leaders, key experts and consultants in the subject area, Project Board, project stakeholders, academia, local government and CSOs, etc. Additionally, the MTR team is expected to conduct field missions to Rodrigues.

The final MTR report should describe the full MTR approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the review.

**5. DETAILED SCOPE OF THE MTR**

The MTR team will assess the following four categories of project progress. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for extended descriptions.

**i. Project Strategy**

Project design:

* Review the problem addressed by the project and the underlying assumptions. Review the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document.
* Review the relevance of the project strategy and assess whether it provides the most effective route towards expected/intended results. Were lessons from other relevant projects properly incorporated into the project design?
* Review how the project addresses country priorities. Review country ownership. Was the project concept in line with the national sector development priorities and plans of the country (or of participating countries in the case of multi-country projects)?
* Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
* Review the extent to which relevant gender issues were raised in the project design. See Annex 9 of *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines.
* If there are major areas of concern, recommend areas for improvement.

Results Framework/Log frame:

* Undertake a critical analysis of the project’s log frame indicators and targets, assess how “SMART” the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary.
* Are the project’s objectives and outcomes or components clear, practical, and feasible within its time frame?
* Examine if progress so far has led to, or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women’s empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
* Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART ‘development’ indicators, including sex-disaggregated indicators and indicators that capture development benefits.

**ii. Progress Towards Results**

Progress Towards Outcomes Analysis:

* Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*; colour code progress in a “traffic light system” based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as “Not on target to be achieved” (red).

**Table. Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Strategy** | **Indicator[[38]](#footnote-38)** | **Baseline Level[[39]](#footnote-39)** | **Level in 1st PIR (self- reported)** | **Midterm Target[[40]](#footnote-40)** | **End-of-project Target** | **Midterm Level & Assessment[[41]](#footnote-41)** | **Achievement Rating[[42]](#footnote-42)** | **Justification for Rating**  |
| **Objective:**  | Indicator (if applicable): |  |  |  |  |  |  |  |
| **Outcome 1:** | Indicator 1: |  |  |  |  |  |  |  |
| Indicator 2: |  |  |  |  |  |
| **Outcome 2:** | Indicator 3: |  |  |  |  |  |  |  |
| Indicator 4: |  |  |  |  |  |
| Etc. |  |  |  |  |  |
| **Etc.** |  |  |  |  |  |  |  |  |

**Indicator Assessment Key**

|  |  |  |
| --- | --- | --- |
| Green= Achieved | Yellow= On target to be achieved | Red= Not on target to be achieved |

In addition to the progress towards outcomes analysis:

* Compare and analyse the GEF Tracking Tool at the Baseline with the one completed for the Mid-Term Review.
* Identify remaining barriers to achieving the project objective in the remainder of the project.
* By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.

**iii. Project Implementation and Adaptive Management**

Management Arrangements:

* Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
* Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement.
* Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.

Work Planning:

* Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
* Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?
* Examine the use of the project’s results framework/ logframe as a management tool and review any changes made to it since project start.

Finance and co-finance:

* Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
* Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
* Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
* Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

Project-level Monitoring and Evaluation Systems:

* Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
* Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?

Stakeholder Engagement:

* Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
* Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
* Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

Reporting:

* Assess how adaptive management changes have been reported by the project management and shared with the Project Board.
* Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)
* Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Communications:

* Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?
* Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)
* For reporting purposes, write one half-page paragraph that summarizes the project’s progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.

**iv. Sustainability**

* Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
* In addition, assess the following risks to sustainability:

Financial risks to sustainability:

* What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project’s outcomes)?

Socio-economic risks to sustainability:

* Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?

Institutional Framework and Governance risks to sustainability:

* Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Environmental risks to sustainability:

* Are there any environmental risks that may jeopardize sustenance of project outcomes?

**Conclusions & Recommendations**

The MTR team will include a section of the report setting out the MTR’s evidence-based conclusions, in light of the findings.

Recommendations should be succinct suggestions for critical intervention that are specific, measurable, achievable, and relevant. A recommendation table should be put in the report’s executive summary. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for guidance on a recommendation table.

The MTR team should make no more than 15 recommendations total.

**Ratings**

The MTR team will include its ratings of the project’s results and brief descriptions of the associated achievements in a *MTR Ratings & Achievement Summary Table* in the Executive Summary of the MTR report. See Annex E for ratings scales. No rating on Project Strategy and no overall project rating is required.

**Table. MTR Ratings & Achievement Summary Table for (*Project Title*)**

|  |  |  |
| --- | --- | --- |
| **Measure** | **MTR Rating** | **Achievement Description** |
| **Project Strategy** | N/A |  |
| **Progress Towards Results** | Objective Achievement Rating: (rate 6 pt. scale) |  |
| Outcome 1 Achievement Rating: (rate 6 pt. scale) |  |
| Outcome 2 Achievement Rating: (rate 6 pt. scale) |  |
| Outcome 3 Achievement Rating: (rate 6 pt. scale) |  |
| Etc.  |  |
| **Project Implementation & Adaptive Management** | (rate 6 pt. scale) |  |
| **Sustainability** | (rate 4 pt. scale) |  |

1. **TIMEFRAME**

The total duration of the MTR will be approximately *15 days* over a time period of *6 weeks* starting 20 March 2015. The tentative MTR timeframe is as follows:

|  |  |
| --- | --- |
| **TIMEFRAME** | **ACTIVITY** |
| *22 March 2015* | Application closes |
| *26 March 2015* | Select MTR Team |
| *26 March 2015*  | Prep the MTR Team (handover of Project Documents) |
| *30 March 2 days*  | Document review and preparing MTR Inception Report |
| *31 March 1 day*  | Finalization andValidation of MTR Inception Report- latest start of MTR mission |
| *31 March- 8 April 2015 – 7 days* | MTR mission: stakeholder meetings, interviews, field visits |
| *7 April 2015*  | Mission wrap-up meeting & presentation of initial findings- earliest end of MTR mission |
| *17 April - 3 days*  | Preparing draft report and draft Tracking Tool |
| *30 April - 2 days*  | Incorporating audit trail from feedback on draft report/Finalization of MTR report (note: accommodate time delay in dates for circulation and review of the draft report) |
| *5 May 2015* | Preparation & Issue of Management Response |
| *5 May 2015* | Expected date of full MTR completion, including Tracking Tool |

Options for site visits should be provided in the Inception Report.

1. **MIDTERM REVIEW DELIVERABLES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Deliverable** | **Description** | **Timing** | **Responsibilities** |
| **1** | **MTR Inception Report** | MTR team clarifies objectives and methods of Midterm Review | No later 30 March | MTR team submits to the UNDP Mauritius CO and project management |
| **2** | **Presentation** | Initial Findings | End of MTR mission: 8 April 2015 | MTR Team presents to project management and the UNDP Mauritius CO |
| **3** | **Draft Final Report and Tracking Tool** | Full report (using guidelines on content outlined in Annex B) with annexes | 17 April 2015 | Sent to the UNDP Mauritius CO, reviewed by RTA, Project Coordinating Unit, GEF OFP |
| **4** | **Final Report and Tracking Tool\*** | Revised report with audit trail detailing how all received comments have (and have not) been addressed in the final MTR report | Within 1 week of receiving UNDP comments on draft: 30 April 2015 | Sent to the UNDP Mauritius CO |

1. **MTR ARRANGEMENTS**

The principal responsibility for managing this MTR resides with the Commissioning Unit. The Commissioning Unit for this project’s MTR is the UNDP Mauritius Country Office. The Consultants shall comply strictly with comments made on any deliverable by the UNDP CO, the UNDP GEF Regional Technical Adviser and the UNDP Independent Evaluation office.

The commissioning unit will contract the consultants and ensure the timely provision of per diems and travel arrangements within the country for the MTR team. The Project Team will be responsible for liaising with the MTR team to provide all relevant documents, assist in set up stakeholder interviews, and assist in arranging field visits.

1. **TEAM COMPOSITION**

A team of two independent consultants will conduct the MTR - one international consultant and team leader and one local consultant. The consultants cannot have participated in the project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project’s related activities.

The selection of consultants will be aimed at maximizing the overall “team” qualities in the following areas:

* Recent experience with result-based management evaluation methodologies;
* Experience applying SMART indicators and reconstructing or validating baseline scenarios;
* Competence in adaptive management, as applied to Climate Change Mitigation Focal Area
* Experience working with the GEF or GEF-evaluations;
* Experience working in Mauritius or SIDS
* Work experience in relevant technical areas for at least 10 years for the International Consultant and 5 years for the local consultant;
* Demonstrated understanding of issues related to gender and Climate Change Mitigation; experience in gender sensitive evaluation and analysis.
* Excellent communication skills;
* Demonstrable analytical skills;
* Project evaluation/review experiences within United Nations system will be considered an asset;
* A Master’s degree in Electronic or Electrical Engineering, Renewable Energy, Science, or other closely related field for the International Consultant and a Degree in the same fields for the National Consultants.
1. **PAYMENT MODALITIES AND SPECIFICATIONS**

10% of payment upon approval of the final MTR Inception Report

30% upon submission of the draft MTR report and Tracking Tool

60% upon finalization of the MTR report and Tracking Tool

1. **APPLICATION PROCESS**

**Recommended Presentation of Proposal:**

1. **Letter of Confirmation of Interest and Availability** using the [template](https://intranet.undp.org/unit/bom/pso/Support%20documents%20on%20IC%20Guidelines/Template%20for%20Confirmation%20of%20Interest%20and%20Submission%20of%20Financial%20Proposal.docx) provided by UNDP;
2. **CV** and a **Personal History Form** ([P11 form](http://www.undp.org/content/dam/undp/library/corporate/Careers/P11_Personal_history_form.doc);
3. **Brief description of approach to work/technical proposal** of why the individual considers him/herself as the most suitable for the assignment, and a proposed methodology on how they will approach and complete the assignment; (max 1 page)
4. **Financial Proposal** that indicates the all-inclusive fixed total contract price and all other travel related costs (such as flight ticket, per diem, etc), supported by a breakdown of costs, as per template attached to the Letter of Confirmation of Interest template. If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

Applications should be submitted online through the UNDP jobs website. No other mode of application will be accepted.

**Criteria for Evaluation of Proposal:** Only those applications which are responsive and compliant will be evaluated. Offers will be evaluated according to the Combined Scoring method – where the educational background and experience on similar assignments will be weighted at 70%and the price proposal will weigh as 30% of the total scoring. The applicant receiving the Highest Combined Score that has also accepted UNDP’s General Terms and Conditions will be awarded the contract. The Evaluation Criteria will be as follows:

International Consultant

|  |  |
| --- | --- |
| **Criteria (Technical)** | **Weight (%)** |
| Advanced University Degree (Masters or equivalent) in Electrical or Electronic Engineering, Renewable Energy, Science or other closely related field. | 15 |
| At least 10 years of relevant professional experience in Climate Change mitigation and Project Evaluation | 15 |
| Highly knowledgeable of GEF and UNDP-GEF monitoring and evaluation policies procedures an advantage; | 10 |
| Familiarity with Mauritius or any Small Island Development States (SIDS); | 5 |
| Excellent in human relations, coordination, planning and team work. | 5 |
| Be fully IT literate | 5 |
| Brief Technical Proposal  | 15 |
| Criteria (Financial) | 30 |
| Total points obtainable | 100 |

National Consultant

|  |  |
| --- | --- |
| **Criteria (Technical)** | **Weight (%)** |
| University Degree (Masters or equivalent) in Electrical or Electronic Engineering, Renewable Energy, Science, or other closely related field. | 15 |
| At least 5 years of relevant professional experience in Climate Change mitigation and Project Evaluation | 15 |
| knowledgeable of GEF and UNDP-GEF monitoring and evaluation policies procedures an advantage; | 10 |
| Excellent in human relations, coordination, planning and team work. | 5 |
| Be fully IT literate | 5 |
| Brief Technical Proposal  | 20 |
| Criteria (Financial) | 30 |
| Total points obtainable | 100 |

1. mid Term EvaluAtion Criteria and Questions

| **Contents** | **Main evaluation criteria and questions** |
| --- | --- |
| **4. Findings: Project strategy**4.1 Project Design* Problem being addressed
* Relevance and country drivenness

4.2 Results framework / Log-frame* Log-frame; risks and assumptions; Indicators
* Stakeholder participation; linkages with other initiatives; replication approach
 | * What is the problem being addressed by the project and are the underlying assumptions are correct
* Does the project strategy provide the most effective route towards expected/intended results?
* Were lessons from other relevant projects properly incorporated into the project design?
* How the project addresses priorities of Mauritius. Was the project concept in line with the national sector development priorities and plans of Mauritius?
* Were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
* To what extent relevant gender issues were raised in the project design.
* Are there are major areas of concern, recommend areas for improvement.
* Does the project adequately take into account the national realities, both in terms of institutional and policy framework in its design and implementation?
* Is the project country-driven?
* If the project progress is not good, what changes could have been made (if any) to the project design in order to improve the achievement of the project’s expected results during rest of the project implementation period
* How ‘SMART’, (Specific, Measurable, Attainable, Relevant, Time-bound), the midterm and end-of-project targets are.
* Are the project’s objectives and outcomes or components clear, practical, and feasible within its time frame?
* Has the progress so far led to, or could in the future catalyse, beneficial development effects (i.e. income generation, gender equality and women’s empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
* Are the broader development and gender aspects of the project are being monitored effectively.
 |
| 5. **Findings: Progress towards results** 5.1 Attainment of outcomes and outputs* Progress towards outcomes analysis
* Remaining barriers to achieve project objectives

5.2 Global environmental and other impacts * GHG emission reduction estimates
* Other impacts
 | * Review the log-frame indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix, with progress indicators for outcomes/outputs, indicating baseline and target levels, as well as current level and/or reported in PIR linked with ratings for each outcome
* Results in terms of contribution to sustainable development benefits, as well as global environmental benefits (direct and indirect emission reduction)
* Compare and analyze the GEF Tracking Tool at the Baseline with the one completed at the time of Midterm Evaluation
* What is the status and issues with employing grid connected solar PV
* What are the remaining barriers to achieving the project objective in the remainder of the project?
* What are the aspects of the project that have already been successful and what are the ways in which the project can further expand these benefits.
 |
| **6. Findings: Project implementation** 6.1 Adaptive management and planning; monitoring and evaluation* Management
* Work planning
* Reporting
* Communications
* M&E systems

6.2 Stakeholder engagement 6.3 Finance and co-financing | * *Management:* appropriateness of the institutional arrangement and whether there was adequate commitment to the project? Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision- making transparent and undertaken in a timely manner? Recommend areas for improvement; Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement; Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement
* *Work planning*: Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved; Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?; Examine the use of the project’s results framework/log frame as a management tool and review any changes made to it since project start.
* *Reporting:* Assess how adaptive management changes have been reported by the project management and shared with the Project Board; Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?); Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.
* *Communications:* Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results? Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?);
* *M&E:* Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive? Examine the *financial management* of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?
* *Project management:* Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
* *Participation and country driven processes:* Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
* *Participation and public awareness:* To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?
* Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
* Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
* Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
* Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?
 |
| **7. Findings: Sustainability**7.1 Project risks 7.2 Financial risks to sustainability7.3 Socio-economic to sustainability7.4 Institutional framework and governance risks to sustainability7.5 Environmental risks to sustainability | * Whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
* *Financial*: What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project’s outcomes)?
* *Socioeconomic*: Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?
* *Institutional*: Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits?
* *Environmental*: Are there any environmental risks that may jeopardize sustenance of project outcomes?
 |
| **8. Conclusions and recommendations**8.1 Conclusions* Summary of main findings and of ratings; statements on strengths and weaknesses
* Remaining barriers

8.2 Recommendations | * + Identify remaining barriers to achieving the project objective in the remainder of the project, and by reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits
	+ MTE Ratings & Achievement Summary Table will be provided, summarizing the ratings on a) results, b) implementation and adaptive management, 3) sustainability with a short description of the rating’s justification
	+ Corrective actions for the design, implementation, monitoring and evaluation of the project
	+ Actions to follow up or reinforce initial benefits from the project
	+ Proposals for future directions underlining main objectives
 |

1. Documents reviewed

**Project Design Related Documents**

* Project Document
* Document at CEO Endorsement
* Project Information Form
* Project Inception Meeting Report
* Project Preparation Grant
* STAP Screening of PIF
* GEF Tracking Tool at the time of CEO Endorsement
* Excel Sheet used for Tracking Tool at the time of CEO endorsement

**Work Plan Documents**

* Quarterly work plan (Q3 2014, Q4 2014, Q1 2015)
* Annual Work Plan Up to April 2015
* Annual Work Plan Up to Dec 2014

**Progress Reporting Documents**

* Quarterly Progress Report (Q1, Q2, Q3, Q4 2014)
* Financial Report (Q2, Q3, Q4 2014)
* Notes to Financial Report (Q2, Q3, Q4 2014)
* Combined Delivery Reports (CDR) (2012, 2103, 2014)

**Steering Committee Meeting Reports**

* Steering Committee Minutes of Meeting Report (6th June 2014)
* Steering Committee Minutes of Meeting Report (17th Oct 2014)
* Steering Committee Minutes of Meeting Report (27 Feb 2015)

**Project Implementation Review (PIR)**

* PIR 2013
* PIR 2014

**Documents supporting progress of Components / Deliverables of the Project**

* Mercado's Report Summary
* Mercado's Report Vol 1
* Mercado's Report Vol 2
* Mercado's Report Vol 3
* Mercado's Report Vol 4
* TOR – Technical Support to MEPU (related to outcomes 1.1 and 1.2)
* RFP by CEB for Solar PV
* RFP by CEB for Outcome 2 (part)
* RFP by CEB for Strategy for Smart grid

**Internal Communications**

* MOFED letter to UNDP - No Objection for transferring funds to CEB to support Feed in Tariff
* UNDP Letter to MIDF requesting co-financing

**Other Documents**

* Terminal Evaluation report of UNDP / GEF Project – Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings
* Position of Mauritius concerning Climate Change Negotiations
* Write up for PV project at Rodrigues
* Mauritius Contribution to Climate Change Mitigation efforts
* Audit report of KPMG
* Draft Management Letter KPMG
* Power Purchase Agreement 1
* Power Purchase Agreement 2
* Power Purchase Agreement 3
* Power Purchase Agreement 4
* Maurice Ile Durable
* Power Point Presentation for Rodrigues Projects
* Time lines for Rodrigues PV Projects
1. mission agenda and itinerary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Time** | **Persons met**  | **Organisation** | **Location** |
| 13-Apr 2105 | 14h00 | Meeting of International and NationalConsultants  |   | St Georges Hotel, P Louis |
|   | 14h30 | Mr. S Ramchurn, Environment Programme Analyst | UNDP | UNDP |
|   |   | Mr S Ramchurn, Mr Ally Rujbally & Mr Iqbal Dreepaul |  Project Team | UNDP |
| 14-Apr 2015 | 9h00 | Mr Ally Rujbaly - Project Manager Mr Iqbal Dreepaul - Project Assistant | Central Electricity Board (CEB) | UNDP  |
|   | 13h00 | Mrs Nirmala Seenarain, Environment Officer | Ministry of Environment, SD & DBM | MOESDDBMP Louis |
|   | 15h30 | Mr B Jankee, Lecturer | MITD | UNDP |
|   | 16h30 | Mr Prakash Ramiah | Leal Energie (Solar PV supplier) | UNDP |
| 15-Apr 2015 | 9h15 |  Dr P Soonarane (Dep Director) & Mr A Beetun (Senior Planner) | Ministry of Energy & Public Utilities | MEPU |
|   | 11h00 |  Mr Riad Fuzurally, Analyst  | Min of Finance & Economic Development | MoFED |
|   | 13h45 | Mrs S Ramessur & Mr Raj Boneeady | Meteorological Department  | UNDP |
|   | 14h45 | Mr Laurent Bergadaa, Director | Agence Francaise de Development | Caudan Waterfront |
| 16-Apr 2015 | 6h30 | Rodrigues visit  |   | Rodrigues Island |
|   | 9h00 | Ms Stenny Emilien, Senior Analyst | Rodrigues Regional Assembly |   |
|   | 9h30 | Meeting with Commissioner for Environment & Ors  | Commission for Environment |   |
|   |   | Meeting with Representatives of MITD, Public Infrastructure, Fisheries, Maison des Pecheurs |   |   |
|   |   | Presentation by STM Sooprayen | Rodrigues Regional Assembly |   |
|   |   | Presentation by UNDP Consultants & Discussions |   |   |
|   | 13h15 | Site Visit at Le Chou, MITD | Project beneficiary, Rodrigues |   |
|   | 13h45 | Site Visit at Maison des Pecheurs | Project beneficiary, Rodrigues |   |
|   | 14h30 | Site Visit at Central Administration | Project beneficiary, Rodrigues |   |
|   | 15h15 | Mr D Hee Hong Wye, Ag. Island Chief Executive, | Rodrigues Regional Assembly |   |
| 17-Apr 2015 | 10h00 | Mr Simon Springett (UNDP RR) & Mr S Ramchurn | UNDP Resident Representative | UNDP |
|   | 13h00 | Mr Hubert Leclezio, Business Development Officer | Alteo Astonfield Solar Ltd | UNDP |
|   | 14h00 | Mr Lavesh Beedasee, Representative | Astonfield Solar (Mauritius) Ltd | UNDP |
|   | 15h00 | Mr Fred Sisson, CEO | Synnove Solar (Mauritius) One Ltd | UNDP |
|   | 15h30 | Mr Ally Rujbally & Mr Iqbal Dreepaul | CEB |  UNDP |
|   | 16h15 | Shakil Beedassy, Independent Consultant | Was involved in Project Design |  UNDP |
| 18-Apr 2015 |   | Stock taking |   | Hotel |
|   |   | Collection of additional data (if required) |   |   |
| 19-Apr 2015 |   | Data Analysis, compilation of initial findings |   | Hotel |
|   |   | Preparation of Presentation |   |   |
| 20-Apr 2015 | 9h00 | Mr V Jhummun, Non-Utility Generation Manager  | CEB | CEB, Ebene |
|   | 10h00 | Mr G Hebrard, General Manager | CEB | CEB, Ebene |
|   | 11h00 | Mr Shamsir Mukoon, National Project Director | CEB | CEB, Ebene |
|   | 12h45 | Y K Ramgoolam (Lecturer) & Dr R Ah King (Ass Professor) | University of Mauritius | Reduit |
|   |   | Visit Solar PV Installation at UoM |   |   |
|   | 14h00 | Mr Madev Balloo (Charge de Projet) & H Granjean (Attache) | European Commission | St James Court, P Louis |
|   | 15h30 | Mr R Ghurburrun, Development Officer, Outer Islands Dev Corporation (OIDC) | Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Island | UNDP Office |
|   | 16h30 | Mr Robert Kelly, Regional Technical Adviser (on Skype) | UNDP, Ethiopia | UNDP, Ethiopia |
| 21-Apr 2015 | 9h00 | Project Management Team |   | CEB, Ebene |
|   |   | Preparation of Presentation |   |   |
|   | 14h00 | Mr S Ramchurn, Mr Ally Rujbally, Mr I Dreepaul, Mr S Burkutally, Mr N Edoo, Mr I Nuseeb | Mission wrap-up meeting & presentation of initial findings UNDP & CEB | CEB, Ebene |
| 29-Apr 2015 | 10h30 | Mr Gregory Martin, Head of Mission (additional meeting by National Consultant) | Regional Council of Reunion  | Ebene |
|   | 11h45 | Mr  Abdel Khoodaruth & Mr Vikash Oree (additional meeting by National Consultant) | University of Mauritius | Reduit |

1. Solar PV Installations Supported Under SSDG Scheme

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Site** | **Capacity** | **Date** | **Total Project Cost (MUR)** | **Amount Requested (MUR)** | **Amount Approved (MUR)** | **Amount Disbursed (MUR)** |
| Jean Lebrun GS | 5 kWp | 2012 | 7741150 | 7741150 | 7741150 | 6192920 |
| M.Frank Richard SSS | 5 kWp |
| D. Ramphul State College | 5 kWp |
| S.Virahsawmy SSS | 5 kWp |
| R. Gujadhur SSS | 5 kWp |
| F. Boyer de la Giroday SSS | 5 kWp |
| Forest Side SSS (Boys) | 5 kWp |
| Willoughby GS | 5 kWp |
| Palma SSS | 5 kWp |
| La Gaulette SSS | 5 kWp |
| Bhujoharry College | 50 kWp | 2013 | -  | 2000000 | 2000000 | 1000000 |
| Labourdonnais College | 10 + 3 kWp | 2013 | 6000000 | 1600000 | 1600000 | 800000 |
| MGSS Nouvelle France College  | 10 kWp | 2014 | 944462 | 500000 | 472232 | 236116 |
| New Eton College | 10 kWp | 2014 | 960544 | 300000 | 300000 |  -  |
| Friendship College | 10 kWp | 2014 | 3400000 | 1700000 | 1700000 |  -  |
| Salesian Home  | 17 kWp | 2014 | 2500000 | 1100000 | 1100000 | 550000 |
| Lois Lagesse Trust Fund | 10 kWp | 2014 | 1000000 | 500000 | 500000 |  -  |
| Lycee des Mascareignes | 50 kWp | 2013 | -  | 1500000 | 1500000 | 1500000 |
| Marechal College (Rodrigues) | 10 kWp | 2014 | 1150000 | 450000 | 450000 | 450000 |
| Food Palace (Rodrigues) | 10 kWp | 2014 | 1150000 | 450000 | 345000 | 345000 |
| BEC (67 Educational Institutions) | 750 kWp | 2013 | 110400000 | 17500000 | 17500000 | 17500000 |

1. Snap Shot of Tracking Tool





1.
2. About the evaluatorS

**Mr. Dinesh Aggarwal** is a climate change mitigation and sustainable development specialist. He has master’s degree in Chemical Engineering from Indian Institute of Technology, Delhi (IIT, Delhi). In the area of climate change mitigation he has wide experience of working across different sectors ranging from waste management, energy efficiency, chemical processes to renewable energy, using financial, policy, technical and regulatory measures.

He has more than 30 years of professional experience providing consulting services in the domain of business research, sustainable development, development studies, climate change mitigation and adaptation, monitoring and evaluation, development of standards etc. His past employers include TERI, Deloitte and, UNFCCC. He is presently working as an independent consultant. Apart from India he has experience of working in Germany, Japan, Thailand, Jordan and Tuvalu.

He has in the past worked on the projects funded by donor agencies like DFID, GIZ, CIDA and multilateral agencies like UNDP /GEF, UNICEF, UNIDO. Being a member of the methodologies panel of CDM Executive Board he has worked for United Nations Framework Convention for Climate Change (UNFCCC) for four years. He has experience for development, implementation and evaluation of projects having result based management framework.

**Mr. Madoo Desha** holds a B Tech in Electrical Engineering from IIT Delhi, an MSc in Water and Environmental Management from Staffordshire University and an MBA from Georgia Institute of Technology. He has a good understanding of the socio-economic and environmental challenges of Mauritius, where he has been working during the past 40 years. He is currently working as an Independent Consultant in the field of energy efficiency, climate change and sustainability.

Since 2004, he has been involved in several energy, water and sustainability projects, and he has accumulated work experience in the areas of renewable energy and solar PV. As HOO of MID Fund, attached to the Ministry of Energy and Public Utilities in 2009/10, he was involved in the assessment of several renewable energy (RE) and solar PV projects for funding purposes. He has had hands on experience in several solar PV projects during the past five years. He has completed several projects with UNDP CO in Mauritius, including as assignment as National Climate Change Coordinator from 2011 to 2012.

1. consultant code of conduct form

**Evaluators/reviewers:**

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people’s right not to engage. Evaluators must respect people’s right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders’ dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

**Evaluation/reviewer Consultant Agreement Form**

Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant:

Name of Consultancy Organization (where relevant): I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at

Signature:

1. Audit Trail

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| --- | --- | --- | --- | --- |
| **Author** | **#** | **Para No./ comment location**  | **Comment/Feedback on the draft TE report** | **TE team****response and actions taken** |
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1. Evaluation Report Clearacne Form

Evaluation Report Reviewed and Cleared by

UNDP Country Office

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

UNDP GEF RTA

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. This electricity generation figure reflects the expectation as noted in Section 38 that all new plants specifically targeted for installation as part of the project would be fully operational by January 2013 [↑](#footnote-ref-1)
2. NA: Not Applicable, HS: Highly Satisfactory, S: Satisfactory, MS: Marginally Satisfactory, MU: Marginally Unsatisfactory, U: Unsatisfactory, HU: Highly Unsatisfactory, L:Llikely, ML: Moderately Likely, MU: Moderately Unlikely, U: Unlikely [↑](#footnote-ref-2)
3. *Project-Level Monitoring: Guidance for Conducting Mid-term Reviews of UNDP-supported, GEF-financed projects* (UNDP, 2014)*,*

Also taking into account elements of the *Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed projects* (UNDP, 2012) [↑](#footnote-ref-3)
4. This electricity generation figure reflects the expectation as noted in Section 38 that all new plants specifically targeted for installation as part of the project would be fully operational by January 2013 [↑](#footnote-ref-4)
5. Wind turbines were installed in 1980 but they soon fell prey to cyclones and got destroyed [↑](#footnote-ref-5)
6. SMART’, (Specific, Measurable, Attainable, Relevant, Time-bound) [↑](#footnote-ref-6)
7. As per Project Document [↑](#footnote-ref-7)
8. Revised at the time of project inception meeting to reflect the position at the time of project inception (if different from the position at the time of project design) [↑](#footnote-ref-8)
9. As per Project Document [↑](#footnote-ref-9)
10. As per Project Document [↑](#footnote-ref-10)
11. Revised at the time of project inception meeting [↑](#footnote-ref-11)
12. As reported in PIR for the year 2014 [↑](#footnote-ref-12)
13. HS= Highly satisfactory, S= Satisfactory, MS= Moderately Satisfactory, MU= Marginally Unsatisfactory, U= Unsatisfactory, HU= Highly Unsatisfactory [↑](#footnote-ref-13)
14. MEPU has awarded a consultancy for development of ’Renewable Energy Master Plan” with support from AFD ( Agence Française de Développement). This consultancy also covers Output 1.2. During 3rd steering committee meeting (February 2015) it was decided to take out these two components out of the project as they are being take care of separately by MEPU [↑](#footnote-ref-14)
15. CEB awarded a consultancy assignment for Medium Sized Distributed Generators, co-financing modelling for other technologies from the SIDSDOCK mechanism through the World Bank (WB). Many of the objectives of the study proposed by WB and the Outputs / Outcomes of the UNDP / GEF project were overlapping; a collaborative approach was taken to enhance the overall results and effectiveness of this consulting assignment. The consulting assignment was awarded to AF-MERCADOS EMI (Mercados). The consulting assignment has since been completed. [↑](#footnote-ref-15)
16. The assignment was later awarded to Mercados. For more details please see Foot Note 15 [↑](#footnote-ref-16)
17. Rating done for the task of putting solar PV of the building of Regional Assembly of Rodrigues [↑](#footnote-ref-17)
18. The documents reviewed during the MTE mentions only four parties with whom PPAs has been singed. Although could not be independently validated, the project team confirmed that agreements has been signed with five parties, the fifth one being Harel Mallac [↑](#footnote-ref-18)
19. This electricity generation figure reflects the expectation as noted in Section 38 that all new plants specifically targeted for installation as part of the project would be fully operational by January 2013 [↑](#footnote-ref-19)
20. The documents provided have details for 4 projects. However, it was confirmed by the project team that fifth PPA has also been singed [↑](#footnote-ref-20)
21. Source: CEO endorsement document [↑](#footnote-ref-21)
22. Manual for Calculating GHG Benefits for GEF Projects: Energy Efficiency and Renewable Energy Projects - 2008 [↑](#footnote-ref-22)
23. Level 4 is the situation where GEF contribution is dominant, but some of this reduction can be attributed to the baseline,” GEF causality = 80 percent [↑](#footnote-ref-23)
24. Solar PV facilities at the schools has already been commissioned at the time of SSDG implementation [↑](#footnote-ref-24)
25. The fiscal support to the school projects was provided by the government under its SCDG scheme. The expenses has not been budgeted in the project document [↑](#footnote-ref-25)
26. Figure provided by the project team [↑](#footnote-ref-26)
27. Figure provided by the Project team [↑](#footnote-ref-27)
28. As per project Document [↑](#footnote-ref-28)
29. Prepared based on the analysis of CEO endorsement document [↑](#footnote-ref-29)
30. Considered at the end of 2nd year as per Project Document [↑](#footnote-ref-30)
31. The MID Fund has been abolished by new government in Dec 2014. This contribution will now come from MOFED(through CEB) for projects in Mauritius, from RRA for project at Rodrigues and from OIDC for projects at Agalega [↑](#footnote-ref-31)
32. Out of 0.028 million USD (about 10 million MUR) 5 million MUR is expected from MID Fund and 5 million MUR is expected from Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Island [↑](#footnote-ref-32)
33. Based on figures provided by the MOESD(for details please see Annex F) [↑](#footnote-ref-33)
34. Figure provided by project team regarding contribution by CEB towards SSDG scheme [↑](#footnote-ref-34)
35. This in kind contribution is to come from Implementing Agency (earlier MEPU, now CEB) for logistics, salaries of the in-house staff working for the project and other such support activities [↑](#footnote-ref-35)
36. Based on discussion with the private parties which will be provided with Feed in Tariff support, the cost of feasibility studies, project development, bidding etc. have been about MUR 1 million per project [↑](#footnote-ref-36)
37. HS: Highly Satisfactory, S: Satisfactory, MS: Marginally Satisfactory, MU: Marginally Unsatisfactory, U: Unsatisfactory, HU: Highly Unsatisfactory, L:Llikely, ML: Moderately Likely, MU: Moderately Unlikely, U: Unlikely [↑](#footnote-ref-37)
38. Populate with data from the Logframe and scorecards [↑](#footnote-ref-38)
39. Populate with data from the Project Document [↑](#footnote-ref-39)
40. If available [↑](#footnote-ref-40)
41. Colour code this column only [↑](#footnote-ref-41)
42. Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU [↑](#footnote-ref-42)