

Second Interim Evaluation of the UNDP-supported GCFfinanced project:

Accelerating the transformational shift to a low-carbon economy in the Republic of Mauritius

(UNDP PIMS: 5681/ GCF: FP033)

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Kevin Enongene – International Consultant

Professor Soonil D D V Rughooputh - National Consultant

Disclaimer:

The views and opinions expressed in this report are the sole responsibility of the evaluators and do not represent the official opinion of UNDP.

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Acronyms and Abbreviations

ADMS	Advanced Distribution and Management System		
AFD	Agence Française de Développement		
AGC	Automatic Generation Control		
AHC	Australian High Commission		
АМА	Accreditation Master Agreement (GCF)		
AMI	Advanced Metering and Infrastructure		
BESS	Battery Energy Storage Systems		
CPO	Community Decod Organization		
СВО			
CC	Climate Change		
CC Act	Climate Change Act		
CEB	Central Electricity Board		
CPB	Central Procurement Board		
FAA	Funded Activity Agreement (GCF)		
FiT	Feed-in Tariff		
GCF	Green Climate Fund		
GHG	Greenhouse Gas		
GEF	Global Environment Facility		
GoM	Government of Mauritius		
GWh	Gigawatt hour		
IPPs	Independent Power Producers		
IRE	Intermittent renewable energy		
IRENA	International Renewable Energy Agency		
KM	Knowledge Management		
kW	Kilowatt		
kWn	Kilowatt peak		
M&E	Monitoring and Evaluation		
	Mouritius Danawahla Energy Aganay		
	Maultuus Kellewable Ellergy Agency		
M/EPU	Ministry of Energy and Public Utilities		
M/ESDMCC	Ministry of Environment, Sustainable Development Management and Chinate Change		
M/FEPD	Vinistry of Finance, Economic Planning and Development		
	Memorandum of Understanding		
MUR	Mauritian Rupee		
MW	Megawatt		
MWh	Megawatt hour		
NDA	National Designated Authority		
NDC	Nationally Determined Contribution		
NGO	Non-Governmental Organisation		
NIM	National Implementation Modality		
0&M	Operation and Maintenance		
OIDC	Outer Island Development Corporation		
PV	Photovoltaic		
RE	Renewable Energy		
SDG	Sustainable Development Goal		
SEP	Stakeholders Engagement Programme		
SESP	Social and Environmental Screening Procedure (UNDP)		

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SIDS	Small Island Developing State		
SIPP	mall Independent Power Producer		
SSDG	Small-Scale Distributed Generation		
STM	Service To Mauritius		
tCO2e	Tonnes of carbon dioxide equivalent		
TOR	Terms of Reference		
UNDP	United Nations Development Programme		
UNDP/CO	UNDP Country Office		
UNDP/GEF	UNDP Global Environmental Finance		
UNDP POPP	UNDP Programme and Operations Policies and Procedures		
UNFCCC	United Nations Framework Convention on Climate Change		
URA	Utility Regulatory Authority		
USD	United States Dollar		

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Project Information Table

Project Title	Accelerating the transformational shift to a low-carbon economy in the Republic of Mauritius			
GCF Project ID (FP#) :	0033	Funding proposal approved		8 June 2017
UNDP Project ID (PIMS#):	5681	Signing of FAA		8 June 2017
ATLAS Business Unit, Award # Proj. ID:	Award ID: 00105006 Output ID: 00106328	Project Document (ProDoc) Signature Date:		1 August 2017
Country:	Mauritius	Date Project Coordinator and Project Managers hired		New Project Coordinator: 1 December 2022 C1 Project Manager: 25 March 2019 C2 Project Manager: 2 April 2018 Finance Assistant: 7 January 2019
Region:	Africa	Inception works date:	shop	Phase I: 9 and 10 November 2017 Phase II: 2 December 2022
Focal Area:	Climate Change - Mitigation	Interim Evaluat Completion Da	tion ate:	Phase I: 31 October 2021 Phase II: 11 January 2023
GCF Results Area:	Climate Change - Mitigation	Planned Closing Date:		11 July 2024
Fund	Green Climate Fund	If revised, proposed op. closing date		-
Accredited entity/ /executing entity	AE: United Nations Development Programme EE: Ministry of Finance, Economic Planning at		e and De	velopment
Other Execution Partners	Component 1: Ministry of Energy and Public Utility Component 2: Central Electricity Board Component 3: Outer Islands Development Corporat		Utilitie Orporati	s on
Project Financing	At approval of funding pr	coposal (US\$)	At Int	erim Evaluation No.2 (US\$)
1] GCF financing:	USD 28,210,000		USD	16,417,117
[2] UNDP contribution:	USD 1,380,000		USD	1,514,900
[3] Government:	USD 123,900,000		USD 3	30,565,846
4] Other partners: AFD			AFD: <u>Additi</u> for the	USD 142,204 <u>conal resources mobilised and expended</u> e GCF project (Not in FAA):
	USD 37,900,000		Utility Regulatory Authority: USD 19,458 CEB: USD 58,872 Australian High Commission: USD 40,000	
[5] Total co- financing $[2+3+4]$:	USD 163,180,000		USD 32,222,950 (as per FAA only)	
PROJECT TOTAL COSTS [1 + 5]	USD 191,390,000		USD 4	48,640,067

1.Executive Summary

The United Nations Development Programme (UNDP) is receiving funding from the Green Climate Fund (GCF) to assist the Republic of Mauritius in meeting its renewable energy goals through the "Accelerating the Transformational Shift to a Low Carbon Economy in the Republic of Mauritius" project.

As required by the Funded Activity Agreement (FAA) for the project, the UNDP Country Office in Mauritius and Seychelles conducted an interim evaluation (IE1) at the end of the first phase of the project to assess the project's implementation, alignment with FAA obligations, and progress towards the objectives and outcomes outlined in the Project Document. IE1 report was submitted in October 2021. As per Schedule 4 of the Funding Activity Agreement (FAA), a second independent interim evaluation report is due within 6 months of the 5th year of implementation (which coincides with the 11 January 2023). The purpose of this second interim evaluation (IE2) therefore is to assess two years of implementation of the GCF project in its second Phase, that is, Years 4 and 5.

Except for interviewing the responsible driver for Component 2, the CEB, all the interviews were conducted virtually. The national consultant was able to visit 3 project sites. Except for MARENA and MACOSS, all stakeholders were available and willing to participate in the virtual interviews. The IE Team made a request to interview the Outer Islands Development Corporation (OIDC) as well given their forthcoming involvement in C3. UNDP stated that there is no focal person at the moment given that no project meetings pertaining to Component 3 have been initiated.

Project Description

The goal of this project is to help the Government of Mauritius achieve its target of using renewable energy to provide 35% of the country's electricity by 2025, as outlined in the Renewable Energy Roadmap 2030 for the Electricity Sector. The project consists of three interconnected components: (1) Institutional strengthening for renewable energy; (2) Improving Grid Absorption Capacity followed by PV deployment; and (3) PV mini grids on the Outer Island of Agalega. It is being implemented in two phases in order to reduce implementation risks and ensure that the second funding disbursement is contingent on the successful completion of the first phase. Phase I includes the following components: (1) Institutional strengthening for renewable energy; and (2) Phase 1 of Component 2: Improving Grid Absorption. Phase II, the focus of IE2, looks at developments Continued Improvement of the Grid Absorption Capacity followed by PV deployment; and (3) PV deployment; and (3) PV mini grids on the Outer Island of Agalega.

Project Progress Summary

IE1 reported Phase 1 to be essentially completed (95%) in the implementation of its core activities during Phase 1 with the attainment of almost all its intended outcomes of reduced emissions through increased low-emission energy access and power generation. Phase II was recommended to start immediately (December 2021).

Despite the continued challenges posed by the pandemic and the Russia-Ukraine conflict, the project continued to make significant progress in implementing its core activities; moreso, driven by the Government commitment to raise the bar of RE penetration to 60% by 2030. The total delivery in Phase I at IE2 is 98.3% (USD 11,866,778 out of USD 12,074,158). The average project burn rate is 76.32%, which is good. The introduction of grid strengthening measures as part of the GCF project has attracted private sector investment for 81.5 MW of intermittent renewable energy (RE) by August 2021. This has contributed to an increase in intermittent RE generation, which rose from 53.8 GWh in 2017 to 163.8 GWh in 2020. The increased installation of intermittent RE power on the grid (115.5 MW as of August

2021) has also resulted in indirect emissions reductions, with an estimated avoidance of 181,500 tonnes of CO2e due to increased grid absorption capacity for intermittent RE. With the installation of PV using GCF support on its way in Phase II, emission reduction due to direct emissions is also judged satisfactory. Of the 3 MW (2,000 x 1.5kWp for low-income households under HSP Phase II), nearly 0.5 MW have already been installed and commissioned. The direct emissions reductions attributable to the project as a result from the direct installation of PV Phase II is estimated to be 2.6 ktCO2e deployed for a full year.

The GCF project has made significant progress in creating an enabling environment for renewable energy through the development of a stronger policy and regulatory framework and the strengthening of the Utility Regulatory Authority (URA) and the Mauritius Renewable Energy Agency (MARENA). Key regulatory instruments, such as the Electricity Act, grid codes and tariff methodology have been developed as part of the project. MARENA has also developed regulations for renewable energy technologies and accreditation of operators, and has conducted awareness sessions and trained women entrepreneurs in solar PV and entrepreneurship skills. These activities are helping to increase knowledge and awareness of renewable energy in Mauritius and empowering women to use renewable energy technologies for income. These efforts will support the deployment of rooftop solar PV panels in Phase 2.

The activities under Output 2.1 have progressed well. At IE2, all of the 18 MW of battery energy storage systems (BESS) are operational at 6 Central Electricity Board (CEB) substations with the latest addition of (damaged during shipment) 4 MW at Jin Fei. CEB staff have received training on the installation and commissioning of the BESS as well as programming to better manage the new technologies being implemented. The Automatic Generation Control (AGC) system is over 95% complete and AGC software licenses will be procured by Jan 2023, and all activities for Output 2.1 are essentially completed at IE2.

Measure	Interim Evaluation Rating	Achievement Description
Project Strategy	N/A	Overall, except for environmental sustainability of the project, the funding proposal and project design are well-written and considerate of the context, needs, and priorities of the project. They are also aligned with national development policies and include a gender analysis and risk mitigation strategies. However, as pointed out by IE1, the Project Results Framework lacks SMART indicators and there is no coherent Knowledge Management strategy.
Progress Towards Results	Objective (Reduced emissions through increased low-emission energy access and power generation): Highly Satisfactory (HS)	The project aims to increase the use of renewable energy and reduce carbon emissions in Mauritius. It has created an enabling environment through improved policies and regulatory frameworks and the strengthening of two organizations, URA and MARENA. The project has also led to an increase in the use of intermittent renewable energy, with indirect emissions avoided reaching almost half expected. The progress of the project is considered

Interim Evaluation Ratings & Achievement Summary Table

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	moderately satisfactory.	
Outcome 1 (Strengthened institutional and regulatory system): Highly Satisfactory (HS)	This project is focused on promoting renewable energy and reducing carbon emissions in Mauritius. It aims to increase the use of local renewable energy sources, reduce reliance on imported fossil fuels, and support the development of a low-carbon economy in Mauritius. The project is also working to improve the resilience of the country's electricity production, particularly in the face of extreme weather events. The project has created an enabling environment through policy and regulatory frameworks and the strengthening of institutions such as URA and MARENA. There have been delays due to the COVID-19 pandemic, including travel restrictions and supply chain disruptions, and the project has faced challenges in staffing MARENA. Despite these challenges, Phase I has been completed, the project is on track and has been rated as highly satisfactory in its progress towards its goal.	
Outcome 2 (Increased number of small, medium, and large low-emission power suppliers) Highly Satisfactory (S)	The project aims to increase the use of local renewable energy sources, reduce the reliance on imported fossil fuels, and support the development of a low-carbon economy in Mauritius. The proportion of renewable energy generated in the electricity mix in Mauritius has reached 23.9% in 2020 with some 115.5 MW of intermittent renewable energy systems having been integrated into the grid so far. The project has also installed 18 MW of battery energy storage systems and is working on deploying 25 MW of solar panels in Phase II. CEB has also recently considered an additional 140 MW of hybrid IREs with 38 MW BESS on the grid. The progress towards the project's goals for Outcome 2 is rated as highly satisfactory.	
Output 1.1 (Institutional strengthening of MARENA and URA): Satisfactory (S)	About 80% of the BESS have been installed and are operational and about 95% of the AGC system is completed. With the AGC software licenses being procured soon and the fine tuning by consultants, all the activities for Output 2.1 will be completed by the end of the year. The 18 MW of BESS currently installed are operating as per requirements of the utility and contributing to a larger share of intermittent RE on the grid (115.5 MW in August 2021). CEB launched RFPs for utility scale hybrid IREs and is also supporting the deployment of solar panels (25 MW) in Phase II. The 18 MW of BESS and the AGC will thus be contributing to this larger share of RE on the grid. CEB engineers and technicians have undergone theoretical and hands-on- training during the installation and commissioning of the BESS have been trained for enhancing their programming capabilities in view of better	

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	manipulating the new technologies being implemented (BESS, AGC, ADMS etc.). The activities under Output 2.1 are fully on track and almost completed. The progress towards results for Output 2.1 is rated as Satisfactory.
Output 2.1 (Improving Grid Absorption Capacity to accept 185 MW intermittent RE): Highly Satisfactory (HS)	All the BESS have been installed and are operational and about 95% of the AGC system is completed. With the AGC software licenses being procured soon the fine tuning by consultants, all the activities for Output 2.1 will be completed shortly. The 18 MW of BESS currently installed are operating as per requirements of the utility and contributing to a larger share of intermittent RE on the grid (115.5 MW in August 2021). CEB launched RFPs for utility scale hybrid IREs and is also supporting the deployment of solar panels (25 MW) in Phase II. The 18 MW of BESS and the AGC will thus be contributing to this larger share of RE on the grid. CEB engineers and technicians have undergone theoretical and hands-on- training during the installation and commissioning of the BESS have been trained for enhancing their programming capabilities in view of better manipulating the new technologies being implemented (BESS, AGC, ADMS etc.). The activities under Output 2.1 are fully on track and almost completed. The progress towards results for Output 2.1 is rated as Highly Satisfactory.
Output 2.2 (Smart Grid) Advanced Distribution Management system Smart Grid Strategy Highly Satisfactory	USD 1.4M worth of ADMS units have been procured and due for delivery in March 2023 followed by a six- months installation period. The remaining USD 200K will be used for a technical consultancy for GIS mapping in 2023.
Output 2.3 (PV Deployment) Actual MW installed by category (gender- disaggregated data) Satisfactory	Two tenders for a total of 9MW already launched, constituting over 36% of the 25 MW target. The installation of the first 3MW for low-income households is ongoing, with nearly 0.5MW already installed and commissioned. The second tender on 6 MW (3,000 x 2kWp for middle-income households and NGOs) will be awarded in January 2023
Output 3.1 (PV mini-grids on the outer island of Agalega) Capacity of PV systems installed Number of OIDC staff trained NA	The project to install a 300 kWp solar photovoltaic (PV) mini-grid with battery energy storage system (BESS) on the outer island of Agalega has yet to start. PMO clearance will be required. This project will procure technical consultancy services to conduct a technical survey and prepare request for proposal (RFP) documents. The project also includes the procurement of the solar PV mini- grid and storage system, as well as logistics and supplies (flyers and manuals) for a field mission to Agalega.

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Project Implementation and Adaptive Management	Satisfactory (S)	The IE1 Team has reported that the project being discussed has been successful in achieving most of its targets for Phase I, and has received significant co-financing from the government, including the Central Electricity Board (CEB), as well as additional funding from the SADC Secretariat and the Clinton Foundation Initiative. However, co-financing from AFD in the form of a loan to CEB has not yet been received due to procurement issues with the Central Procurement Board (CPB). Adaptive management strategies, including the establishment of an informal progress committee and the use of virtual platforms for project monitoring, have been employed to address challenges and maintain progress. The Project Management Unit (PMU) has been dedicated and technically competent, and has provided necessary support to key stakeholders. The PMU's financial management has been satisfactory, and there have been no audit issues. Areas for improvement include knowledge management and communication. The project has established effective environmental and social management measures, but needs to address the handling and disposal of used BESS and solar PV panels. The project's Phase II procurement plan for solar panels has been well-developed, but will depend on timely procurement at both the implementing partner and CPB levels
Overall sustainability	ML	There is strong social and political interest in renewable energy development, and the institutional framework is in place to support it. Financial sustainability is moderately likely, but could be impacted by economic challenges related to the pandemic and the availability of funding. Environmental sustainability may be a concern if there is no proper disposal of used batteries and solar panels at the end of their lifespan. It will be important to carefully consider and address these factors in order to ensure the long-term sustainability of the project.
Financial risk to sustainability	ML	There are several financial risks that could impact the sustainability of the renewable energy project. These include the potential for co-financing to not materialize, shifts in government priorities leading to less operational funding for key agencies, the impact of conflict on petrol prices and the resulting financial hardship for the CEB and increased economic stress on the population, and fluctuations in interest rates and loan affordability. There is also the risk of the operational and maintenance costs of installed PV systems after the warranty period, which could be a financial burden and impact sustainability. It will be important to carefully consider and address these

		financial risks in order to ensure the long-term sustainability of the project.
Socioeconomic risk to sustainability	ML	There is strong political support for renewable energy development in RoM, as reflected in government commitments and the growing demand for skilled technicians in the sector. This provides a conducive environment for the project and can support the long- term socio-economic sustainability of the efforts. However, there are potential challenges, such as delays in recruiting staff or shortages of skilled technicians, that need to be addressed. The MARENA Scholarship Scheme is a positive step towards building the local capacity needed to meet these demands, but it will be important to continue to prioritize training and capacity building efforts. It is also important to continue to engage with all stakeholders, including political leaders, to ensure that renewable energy development is socially and economically sustainable in the long term.
Institutional Framework and Governance risk to sustainability	ML	There is strong political support for renewable energy development in RoM, as reflected in government commitments and the growing demand for skilled technicians in the sector. This provides a conducive environment for the project and can support the long- term socio-economic sustainability of the efforts. However, there are potential challenges, such as delays in recruiting staff or shortages of skilled technicians, that need to be addressed. The MARENA Scholarship Scheme is a positive step towards building the local capacity needed to meet these demands, but it will be important to continue to prioritize training and capacity building efforts. It is also important to continue to engage with all stakeholders, including political leaders, to ensure that renewable energy development is socially and economically sustainable in the long term. The institutional knowledge and technical capability of the staff within the PMU, the UNDP CO, M/OFEPD, M/EPU, MARENA and CEB is strong and there are institutional frameworks in place to support the long- term sustainability of renewable energy targets, such as the need for a review and development of a HR roadmap, the need for continued strengthening of MARENA and URA, and the need for international consultants. It will be important to continue engaging with key stakeholders and prioritize knowledge management and best practices to build public awareness and support for these efforts. It will also be important to find creative solutions, such as partnerships or targeted training, to address these challenges.

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Environmental risk to sustainability	ML	There are environmental risks to the sustainability of the renewable energy project that have been identified and addressed through the development of an updated Environmental and Social Management Plan and the inclusion of a grievance redress mechanism. It is important to continuously monitor for negative impacts and have a process in place for addressing any issues that may arise. There are also potential risks associated with climate change, cyclonic winds, the proper disposal of used batteries and solar panels, the Covid-19 pandemic, and wars that can impact the sustainability of a project. These risks should be included in a risk log and strategies should be developed to mitigate their impact. The IE2 team has determined that there is a moderate risk to the sustainability of Phase 2 of the project although some are not within the scope of the project.

Country Ownership	The GCF project has strong national ownership in Mauritius, as demonstrated by its inclusion in national development plans, policies, and budgets. It has played a key role in transitioning the electricity sector from fossil fuels to renewable energy, and the Renewable Energy 2030 Roadmap for the Electricity Sector was launched in 2019 to support the government's goal of 35% renewable energy by 2025. The introduction of new technologies such as battery energy storage systems, the Automatic Generation Control system, the Gas Insulated Substation, and the Advanced Distribution Management System has led to an increase in the renewable energy target to 60% and a commitment to phase out coal by 2030. The government has also shown its commitment through the establishment of the Climate Change Act, the proclamation of the Electricity Act, the involvement of the Minister of Energy in revising the renewable energy roadmap, and the pledge to fill vacant positions at the MARENA despite the economic challenges. The CEB has also shown strong technical and financial commitment to the project, and has launched requests for proposals for utility-scale solar hybrid systems with battery energy storage. The scaling up of the installed 18 MW of BESS to 38 MW will also increase the contribution of intermittent renewable energy on the grid.
Innovativeness in Result Areas	 A number of result areas stems out from innovative ways of doing things: New ways of handling project (component-wise recruitment for deep diving; digitally-assisted ways of working); Introduction of new technologies to improve grid capacity and reliability, such as battery energy storage systems, the Automatic Generation Control system, the Advanced Distribution Management System, and the Gas Insulated Substation; Use of the National Scheme for Emerging/Innovative Renewable Energy Technologies to introduce potentially new technologies; Mainstreaming gender by involving women in awareness raising and training women entrepreneurs; Increase access to renewable energy through home solar systems and a partial grant mechanism for households and non-commercial adopters in the rooftop PV sector in Mauritius;
Unexpected Results	The renewable energy project has raised expectations among stakeholders due to the government's ambitious targets for green energy production. There have been unexpected delays in the disbursement of an AFD loan due to procurement issues, but

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	the project will not be jeopardized. On the positive side, the project has improved social capital and stakeholders have found creative ways to work together during the Covid-19 pandemic. The DBM may also come onboard as a funding partner for Phase 2. The AfDB is also considering financing 10 GIS substations for the CEB as the project is crucial for meeting renewable energy targets. The AfDB is finalizing a Project Appraisal Report, which will be presented to its board in March. The CEB is expected to launch a procurement exercise by the end of the month.
Replication and Scalability	The GCF project is expected to increase the use of renewable energy technologies by 140 MW. The CEB is confident that the government's vision of using 60% renewable energy by 2030 will be achievable with the support of the newly operational Utility Regulatory Authority, the restructured CEB, the advisory role of MARENA, and the involvement of new players such as the African Development Bank and the Development Bank of Mauritius. The CEB has embraced and mastered new technologies such as the Automatic Generation Control system, the Advanced Distribution Management System and associated hardware, the Gas Insulated Substation, battery energy storage systems, and hybrid PV technologies with storage. The success of this project in Mauritius has potential for replication and scaling up in other small island developing states and beyond. For this to be successful, it is important to document and share lessons learned through an effective knowledge management strategy
Gender Equity	During the project design, a gender analysis was conducted to support gender mainstreaming during implementation. The analysis identified gender-related issues in the energy and transport sectors, the need for gender-disaggregated data, and recommendations for incorporating gender-responsive actions into the project. The Gender Assessment and Action Plan (GAAP) includes actions to ensure equal participation by female-headed households, review documents from a gender and climate change perspective, increase female participation in all project components, and hire a critical mass of women to work in MARENA and train women to install and maintain solar PV systems. The project has emphasized representation of women on the Project Board and Sub Boards and has targeted low-income and women-headed households. At the first review, the rating for gender mainstreaming was satisfactory. Until recently, the staff at MARENA and URA had a good representation of women. The project has a gender action plan and a socio-economic plan in place and has mainstreamed gender considerations into all its activities. The project aims to target low-income and women-headed households for its free rooftop solar PV installations and aims for at least 30% of these households to be women-headed. The gender rating at the second review is considered moderately highly satisfactory.
Coherence in Climate Finance Delivery with Other Multilateral Entities	The GCF project in Mauritius aims to promote the use of renewable energy, reduce carbon emissions, and support the development of a low-carbon economy. It is being implemented by the UNDP with funding from the GCF and co-financing from the Government of Mauritius and the AFD. The project aims to increase the use of local renewable energy sources, reduce reliance on imported fossil fuels, improve the resilience of electricity production, and engage with stakeholders to create an enabling environment for climate finance in Mauritius. It is also working to implement the provisions of the Climate Change Act (2020) and is being supported by other interventions, including the SUNREF Program, AfDB and the DBM. The project has the potential to provide a catalyst for climate finance delivery by other development agencies.
Impact of COVID 19/Ukraine-Russia War	The COVID-19 pandemic and Ukraine-Russia War have caused delays and disruptions in the renewable energy project, including pandemic-related travel restrictions, supply chain disruptions, delays in the commissioning of a battery energy

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	storage system, the completion of an AGC system, staff recruitment, and South-South Cooperation and promoted remote work. It has also led to an increase in the prices of PV components, requiring a reallocation of the budget.
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Recommendations and Lessons Learned

IE2 Recommendations

The following IE recommendations have been formulated with the aim of improving project effectiveness and enhancing the likelihood that project results will be sustained after IE2:

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#	Recommendation	By when By whom	Remarks
	Recommendations for Ma	nagement	
2.1	Recruitment at MARENA	MARENA, MEPU	 MARENA has reached a critical stage and that there is a need to immediately recruit additional staff to support the current management. This is likely to be a challenging situation, as maintaining adequate staffing levels is essential for the effective operation of any organisation. Generally, there are a few potential strategies that could be considered to address this issue: Recruitment: As mentioned, recruiting additional staff to support the current management can help to alleviate the staffing shortage in the short term. It may be helpful to work with a recruitment agency or to advertise the open positions widely in order to attract a diverse pool of qualified candidates. Training and development: Providing training and development opportunities for existing staff can help to build capacity and improve retention rates. This could include offering leadership development opportunities. Organisational restructuring: Reviewing the organisational structure and identifying any inefficiencies or areas where responsibilities could be shared or redistributed could help to better utilise existing staff resources. Temporary staff: Hiring experienced and specialised temporary staff on a short-term basis can help to fill staffing gaps until permanent hires can be made. MARENA should also explore ways and means through financing strategies to fund these specialist as recommended in funding strategy report
			For the case of MARENA, which has attained a critical level, it is important to identify and implement a combination of strategies that can help to address the staffing shortage at MARENA in a timely and effective manner. Pending recruitment, several Service Training to Mauritius (STMs) are proposed to be immediately recruited and secondment strategies (from MEPU and CEB) that will accompany the current management till the recruitment of the CEO and other staff. MARENA to also find ways and means through financing strategies to fund specialists as recommended in funding strategy report.

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2.2	Extension of Phase II by two years	By Q4 2023 GCF	The implementation of Phase I of the project has been extended by one year due to the extension granted in October 2020. It is important to note that the Phase II timelines are still based on the original FAA (Funding Agreement) and that the final evaluation report submission has also been extended by one year. It will be necessary to request an additional two-year extension for Phase II, with one year being added due to the extension in Phase I and another year as contingency. It is important to carefully plan and manage the extension of the project to ensure that it is implemented effectively and efficiently. Effective communication and collaboration with all relevant stakeholders can be critical to the success and sustainability of the project. It may be helpful to engage with stakeholders, such as project beneficiaries and implementing partners, to identify any additional resources or support that may be needed to move the project forward. It can also be helpful to regularly review and update the project plan in light of any changes or challenges that may arise.
2.4	Installation of innovative technological solutions in Mauritius (under the NSEIRET Scheme)	MARENA	 Based on the difficulties/challenges faced by TTT, some recommendations for future installation of technological solutions in Mauritius includes: streamlining the administrative process to make it more efficient; improving communication between agencies and proponents, including responding to communications in a timely manner and holding face-to-face meetings to address concerns. Providing support and assistance to proponents from project hosting agencies, including regular site visits to understand and address any challenges that may arise. Prioritizing sustainable utilities and enacting the URA as soon as possible to provide the necessary framework for new projects. Involving all relevant stakeholders in the decisionmaking process and addressing any concerns or issues that may arise. Streamlining the process for obtaining additional approvals from concerned agencies.

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2.5	Setting up a public/private structure as proposed by the Green Job Framework to facilitate collaboration and communication among stakeholders, and can help to ensure that the project is aligned with the GCF recommendations.	MEPU	Effective communication and collaboration is indeed important for the success and sustainability of a project. It is important to involve all relevant stakeholders in the planning and decision-making process, and to ensure that there is open and honest communication throughout the project. This can help to build trust and confidence among stakeholders, and can help to identify and address any potential issues or challenges that may arise. The Green Job Framework recommended the setting up a public/private structure that can help. This structure can help to facilitate collaboration and communication among stakeholders, and can help to ensure that the project is aligned with the GCF recommendations. It's important to set up this structure at the right time, so that it can effectively support the project and contribute to its success.
2.6	Environmental sustainability	Future GCF Energy projects	Environmental sustainability is an important consideration. Proper disposal of used batteries and PV panels at the end of their lifetime will be crucial to minimise any negative impacts on the environment.

IE2 Lessons Learned

The following are the key lessons learned before IE2:

#	Lessons Learnt @ IE2	Remarks
2.1	A contingency plan is needed to assess and mitigate against War impacts in Phase II.	It is important to assess and mitigate against the potential impacts of war (e.g. Ukraine- Russia war) on a project, particularly during the planning phase. A contingency plan can help to identify potential risks and challenges associated with war and to develop strategies for addressing them.
		 There are several steps that can be taken to assess and mitigate against the impacts of war on a project: Identify the potential risks and challenges: <i>This includes understanding the specific context of the project and the potential risks and challenges that may be faced, such as the likelihood of conflict and the potential impact on project resources.</i> Develop strategies for addressing the risks: <i>This can include developing contingency plans to respond to potential disruptions.</i> Engage with stakeholders: <i>It is important to engage with relevant stakeholders, including project beneficiaries, implementing partners, and local authorities, to understand their needs and concerns and to ensure that the contingency plan is appropriate and effective.</i> Monitor and review the contingency plan: <i>It is important to regularly review and update the contingency plan in light of any changes in the project context or any new risks that may arise. This can help to ensure that the plan is responsive and effective in addressing potential impacts of war on the project.</i>
2.2	A contingency plan can be developed to address high turnover for project	Both MARENA and URA staff have gained considerable training (HACT, MIS, Master RE, RETScreen to cite a few) with the aim to accomplish the project successfully and sustainably. High turnover in a project can have negative impacts on the project's success and sustainability. Some steps that can be taken to address high turnover include:

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	beneficiaries	 Identify the root causes: It is important to understand the reasons behind the high turnover, such as low job satisfaction, lack of opportunities for career advancement, or a toxic work environment. Develop strategies to address the root causes: This can include implementing measures to improve job satisfaction, such as providing training and development opportunities or creating a more positive work culture. Plan for succession: It is important to have a plan in place to ensure that key skills and knowledge are not lost when staff leave the project. This can include identifying and training potential successors or creating a system for transferring knowledge between team members. Communicate with staff: It is important to keep staff informed about the contingency plan and to encourage open communication about any concerns or issues that may be contributing to high turnover. Monitor and review the contingency plan: It is important to regularly review and update the contingency plan in light of any changes in the project context or any new risks that may arise. This can help to ensure that the plan is responsive and effective in addressing high turnover.
2.3	Spin off - embracing new technologies - Case of Floating PV	 Some potential lessons learned from the floating solar PV panel project at Tamarind Falls include: The importance of thorough planning and investigation: <i>It is important to conduct a thorough investigation and assessment of a project before moving forward with implementation. This can help to identify any potential challenges or barriers and to develop strategies for addressing them, especially on the technical and financial sides as was the case for FPV</i> The need for effective communication and collaboration: <i>Effective communication and collaboration with all relevant stakeholders, including government agencies, consultants, and local authorities, can be critical to the success and sustainability of a project. Right time to set up the public / private structure recommended under the Green Job Framework.</i> Addressing potential challenges and barriers: <i>It is important for project stakeholders to keep track of the progress of the project and to identify any potential challenges or barriers that may be causing delays. This can help to ensure that the project is implemented effectively and efficiently.</i> The value of engaging with stakeholders: <i>Engaging with stakeholders, such as project beneficiaries and implementing partners, can help to identify any additional resources or support that may be needed to move the project forward. It can also help to build support and buy-in for the project. There has been a national dialogue on RE following COP 26. Recommendations went up to Cabinet level. Actions still lacking due to missing technical staff at MARENA and funding</i>
2.4	Spin off - embracing New Technologies - Case of Cascading Hydro Project	 There are several lessons that can be learned from this case study: Streamlining the administrative process can help to speed up the implementation of projects. <i>This can be achieved by holding regular meetings between different agencies to discuss and make decisions on projects.</i> Good communication is key to the success of a project. <i>This includes communication between the different agencies involved in the project, as well as between the proponent and the agencies.</i> Project hosting agencies, such as MARENA in this case, should provide support and assistance to proponents to help address any challenges or issues that may arise. Prioritizing sustainable utilities, such as those provided by the Tesla Cascading Hydropower Plant, is important for achieving the Sustainable Development Goals. The URA should be fully enacted as soon as possible to provide the necessary framework for new projects. It's important to involve all relevant stakeholders in the decision-making process and to address any concerns or issues that may arise. This includes engaging with landowners and responding to communications from proponents in a timely manner. The process for obtaining additional approvals, such as those from the CWA (Central Water Authority), WRU (Water Resources Unit), BRDC (Black River District Council), and Forestry, should be streamlined to avoid duplication of

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		efforts.
2.4	Commitment versus Financial Sustainability	It's good to see that CEB is committed to renewable energy development, but it's also important for the organization to consider financial sustainability. Launching hybrid tenders, which combine elements of traditional and renewable energy sources, can help to balance these goals. This can allow CEB to continue investing in renewable energy while also ensuring that it has a financially sustainable business model. It's important for organizations to find a balance between their commitment to sustainability and the need to be financially viable in the long term.

2. Introduction

2.1. Purpose of the interim evaluation

As per Schedule 4 of the Funding Activity Agreement (FAA), the project is expected to submit the second independent interim evaluation report within 6 months of the 5th year of implementation (which coincides with the 11 January 2023). The purpose of this second interim evaluation therefore is to assess two years of implementation of the GCF project in its second Phase, that is, Years 4 and 5.

However, whilst, as per the FAA, Phase II implementation was supposed to begin three years after the 'Effective Date' of the project (11 July 2017), that is, as from 11 July 2020, however, because of the onset of the global pandemic, and the two lockdowns suffered by the country in 2020 and 2021, the project suffered considerable delays. A no-cost extension was requested, and approved, by GCF on 21 October 2020 for a 1-year extension of Phase I. As such, Phase I only completed in December 2021, with the first independent evaluation report submitted in October 2021, and GCF releasing the first Phase II disbursement of around USD 4.3M in late December 2021, effectively allowing the project to move to Phase II.

Consequently, this second independent interim evaluation will only assess the performance of the project over a little less than 1 year of Phase II implementation, as opposed to two years as initially planned in the FAA.

At a high-level, this second IE is meant to:

- i. Critically and objectively assess the status, progress and performance of the project between the time of the 1st interim evaluation and actual;
- ii. provide evidence, or estimation, of positive outcomes and impacts achieved;
- iii. qualify the project's progress and make recommendations on immediate corrective actions required to bring the project back on track if required;
- iv. make recommendations on how to improve aspects of the project, where applicable, to increase the rate of success and the range of impact;
- *v.* provide comfort to the donor fund, i.e. GCF, as well as primary and secondary stakeholders, and the public at large, that the project is being implemented as per the specified requirements (project document, FAA, GCF and UNDP rules, NIM partner rules etc.)

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2.2 Objective and Scope of the IE

The objective of conducting an Interim Evaluation (IE) is to provide an independent assessment of the implementation of the project and its alignment with the Funded Activity Agreement (FAA) obligations and Accredited Entity project document. The assessment will be aligned with the GCF evaluation criteria as well as guidance from the Organization for Economic Co-operation and Development (OECD)/ Development Assistance Committee (DAC) criteria. The IE will assess progress towards the achievement of the project's objectives and outcomes, and further assess areas of improvement.

The aim is to identify the necessary changes required to ensure that the project is on track to achieve its intended results. The evaluation will further assess the project's overall management, credibility of results/reporting, and achievement of results and/or contributions towards expected results, inclusive of behavioural changes necessary to achieve the expected results.

Since a first Interim Evaluation (IE1) report was submitted in November 2021, this second report, IE2 report, covers the period between December 2021 and December 2022 (phase II).

In delivering on the assignment, the IE2 team will assess:

- the implementation of the project and its alignment with FAA obligations and progress towards the achievement of the project objectives and outcomes as specified in the Project Document.
- following GCF guidelines the performance of key criteria: 1) Relevance; 2) Effectiveness; 3) Efficiency; and 4) coherence in climate finance delivery with other multilateral entities.
- cross-cutting issues such as (5) gender equity (6), country ownership, (7) innovation in result areas, unexpected results (both positive and negative), and replication and scalability.
- the impact of Covid 19 on the project implementation and performance.
- early signs of project success or failure with the goal of identifying the necessary changes to be made to set the project on-track to achieve its intended results.

IE2 started in early December 2022 and is being prepared following the GCF and UNDP guidelines.

2.3 Evaluation methodology

The evaluation was delivered using a mixed methods approach which takes into account qualitative and quantitative analysis. The evaluation process constituted: 1) review of secondary literature: this entailed a context and content analysis of relevant documents. This served as a source of secondary data (qualitative and quantitative); 2) Data collection: this entailed primary data collection through interviews (group and individual) and field visits and; 3) reporting which took the form of an interactive process between the consultants and the UNDP team.

The evaluation team employed a three-phase approach for the realisation of the assignment: (i) Inception phase, (ii) data collection and analysis phase and (iii) reporting phase. The final review report was submitted at the end of the reporting phase.

2.3.1 Desk review and Inception

Inception: The objective of the inception phase was to enable a common understanding between the project stakeholders and the evaluation team on the objectives and scope of the assignment. Following the elaboration of the IE inception report by the International Consultant and submission to UNDP, a virtual meeting was organised between the UNDP project team and the international consultant on December 7, 2022 to exchange ideas and discuss the scope of the evaluation, discuss the submitted inception report and reach agreement on initial timelines. A second virtual meeting was organised on December 9, 2022 between the UNDP team (including the Regional Technical Adviser - RTA) and the national consultant. In the course of the meeting, a tentative schedule for interviews and field visits was agreed upon. Following this second meeting, the inception report was revised by the consultants and the final version of the document was submitted to UNDP.

Desk review: Desk review of project documentation served as a source of secondary data. The desk review of documents commenced in the inception phase and continued throughout the evaluation process. The documents reviewed amongst others include:

- The project funding proposal and annexes
- Quarterly progress reports
- Annual performance reports
- Phase 2 project inception workshop report and presentations
- Project inception workshop and meetings reports between October 2021 and December 2022
- Monitoring and evaluation (M&E) plan

2.3.2 Field mission and data collection

Primary data collection was conducted through interviews with relevant project stakeholders using the data collection tools (interview guides) that were validated as part of the inception report. Stakeholders were interviewed by the consultants either individually or in a group and some interviews were conducted in-person while others happened virtually. The following actors/institutions were interviewed as part of this second IE:

- UNDP (Country Office and RTA)
- Ministry of Finance, Economic Planning and Development *Executing Entity*
- Ministry of Energy and Public Utilities (MEPU) *Responsible Party for C1*

- Central Electricity Board (CEB) *Responsible Party for C2*
- Utility Regulatory Authority (URA) *Direct beneficiary*
- Ministry of Environment, Solid Waste Management and Climate Change *Member*, Project Board and Sub-boards
- Agence Francaise de Developpement (AFD) *Member*, Project Board/Sub-boards
- The University of Mauritius (UoM) *Member*, Project Board and Sub-boards representing academia
- National Women's Council (NWC) *Member*, Project sub-board for C2
- National Empowerment Foundation (NEF) Member, Project sub-board C2 (Phase II)
- Development Bank of Mauritius (DBM)

In the course of the interviews, the evaluators took detailed notes. Equally, the evaluation sessions were recorded and later transcribed to supplement notes taken by the evaluators. The list of the actors consulted alongside their affiliations is presented in Annex 2. In addition, field visits were made by the national consultants to the following project sites: Tesla Hydro (in abeyance), AGC System Control at CEB Curepipe and 4 MW BESS at Jinfei.

2.3.3 Report writing and reporting

Following the completion of the primary data collection, the evaluators elaborated a report on the preliminary findings which was submitted to the UNDP team on December 21, 2022. Feedback and comments received on the preliminary findings report were integrated by the consultants into the draft IE report which was submitted to the UNDP/Project team on December 27, 2022. Comments received from UNDP/Project team and other national actors were addressed and a draft 2 of the IE report was resubmitted to UNDP on January 09, 2023 for a second and final round of review. Comments received from this last review round were addressed by the consultants and a final version of the IE2 report was submitted to UNDP on January 10, 2023, alongside an audit trail which provides information on how all the comments received on the first and second draft of the IE report were addressed.

2.3.4 Principles of the design and execution of the IE

In designing and executing the IE, the evaluators adhered strictly to the ethical and professional requirements of the United Nations Evaluation Group, accepting and scrupulously respecting its Code of Conduct for evaluation. This included but not limited to impartiality, objectivity, independence, relevance, utility, credibility, measurability, ethics and partnerships. More specifically, to ensure the highest standard of the mission, the following attitudes were observed:

- Ensuring sources all necessary confidentiality and anonymity
- Giving equal respect to interviewed stakeholders
- Respect the freedom of speech of interviewees
- Respect the diversity of stakeholders and reflect it in an inclusive sampling, with special attention towards women and vulnerable parties
- Use appropriate protocols to adequately reach women and the most disadvantaged groups
- Make it clear, at the outset, to all interlocutors that the Evaluator is neither a UNDP staff member nor a member of any other stakeholder, but an external and independent professional seeking feedback on the project and its implementation, and that information shared is done so anonymously
- Dealing with all in a transparent, respectful and calm manner
- Refrained from any practices prohibited by law and morality

2.4 Brief structure of the IE report

This IE2 report comprises four (04) chapters. This current chapter (Chapter 1) presents the purpose and objectives of the evaluation alongside the methodology employed in the process. The project description and background are presented in Chapter 2. Chapter 3 presents the findings of the IE based on collected primary data, information obtained from the review of relevant project documents and feedback received from project stakeholders. Chapter 4 provides the conclusions and recommendations based on key findings. Additional information to support the evaluation are provided in the annexes found at the end of the IE report.

3 Project Description and Background context

In this chapter, the project description and strategy are presented together with the background context, the chosen project implementation arrangement, project timeline and milestones and an overview of main stakeholders.

3.1 Development Context

Republic of Mauritius (ROM) constitute a group of islands located in the Indian Ocean comprising of Mauritius (the mainland), Rodrigues, Agalega, Cargados Carajos (also known as St Brandon), Tromelin, and the Chagos Archipelago which includes Diego Garcia and other islands. Mauritius and Rodrigues are located at about 2000 km off the east coast of Africa in the South West Indian Ocean; these islands form part of the three Mascarene islands (the third one being Reunion island). Agalega, Tromelin, Cargados Carajos and the Chagos Archipelago are all located further north. Although the total land area of ROM is about 2040 km² with mainland Mauritius occupying about 1865 km², Rodrigues about 108 km², and Saint Brandon/Agalega about 71.2 km², its marine *Exclusive Economic Zone* extends over 2.3 million km² (Figure 1, within the latitudes 5-19 degrees South and longitudes 55-75 degrees East.



Figure 1: Maritime Zone map of the Republic of Mauritius (Source: Continental Shelf, Maritime Zones Administration & Exploration)

As of 1 July 2022, the resident population of the Republic of Mauritius was estimated at 1,262,523 (There were 97.7 males for every 100 females) with a growth rate of ~0.17% (Worldometer, Dec 2022). The breakdown of the population was estimated at 1,217,588 for Mauritius, 44,661 for Rodrigues and 274 for Agalega and St Brandon. As at the end of 2022, the population density is estimated at 629 persons/km² for the ROM.

The main islands of Mauritius and Rodrigues are fully grid connected, and in 2019, the island of Mauritius had an installed capacity of 834 MW of electrical generation sources, while the island of Rodrigues had an installed capacity of 14 MW. There is no electric utility on the Island of Agalega where the inhabitants are supplied with electrical power using small diesel generators operating in 3 isolated mini grids.

Like many Small Island Developing States (SIDS), Mauritius is still heavily reliant on fossil fuels to meet its demands for electrical energy and is vulnerable to external energy shocks. As per the Energy Statistics for the electricity sector for Mauritius, in 2019, 78.3% was generated from non-renewable sources, principally petroleum products and coal and 21.7% from renewable sources, mainly bagasse, hydro, wind, landfill gas and solar. The grid emission factor of Mauritius is extremely high (estimated at 1.01 tonnes CO2/MWh in 2017) due to the prevalence of imported coal (39%) and fuel oil (38%) in the electricity generation mix with greenhouse gas emissions increasing at a rate of about 3% per year and those from the energy sector specifically by about 5% per year. Imported fossil fuels represent 20% of Mauritius' imports, exposing the country to commodity price volatility. Net greenhouse gas emissions are increasing at a rapid rate of \sim 3% per year.

The need to integrate more and more renewable energy (RE) in the electrical energy mix has been specifically recommended in the country's Intended (2015) and Updated (2021) Nationally Determined Contribution, the Second (2010) and Third (2016) National Communications to the UNFCCC, the UNFCCC Technology Needs Assessment (2014), as well as in a comprehensive suite of Government strategies and policies contained in the Long-Term Energy Strategy (2011-2025) and the Renewable Energy Roadmap 2030.

The Green Climate Fund project entitled "Accelerating the transformational shift to a low-carbon economy in the Republic of Mauritius" is aimed at enabling the Government of Mauritius to meet its target of using renewables to supply 35% of the country's energy needs by 2025 and 40% by 2030. The Government Programme (2020-24), entitled "Towards an Inclusive, High Income and Green Mauritius, Forging Ahead Together" makes provision for boosting sustainable development by promoting more extensively the use of clean and renewable energy and continuing to encourage carbon-free energy generation by accelerating the development of renewable energy to reach 35% in 2025 and 40% in 2030. In the 2021-22 budget speech, the Government announced an even more ambitious target of producing 60% of the country's energy needs from green sources by 2030 as well as the total phasing out of the use of coal before 2030. Compared to the 2015 INDC target of 30% GHG emission reduction by 2030, the mitigation ambition of Mauritius in the updated INDC in 2021 has been significantly enhanced with a revised target of 40% GHG emission reduction by 2030.

The GCF project lays down the foundation to boost the broader national strategy to reduce the country's dependence on fossil fuels, enhance energy security, mitigate climate change, improve access to clean and affordable energy, and improve the country's balance of payments. These goals are likely to be interconnected and could have significant benefits for the country in terms of economic and environmental sustainability. Reducing the country's dependence on fossil fuels could help to reduce greenhouse gas emissions and contribute to climate change mitigation efforts. Enhancing energy security could reduce the country's reliance on imported energy sources, which could improve the balance of payments and reduce costs for consumers. Improving access to clean and affordable energy

could also have positive impacts on the quality of life for citizens, particularly in terms of improving health outcomes and reducing energy poverty. It is important to carefully consider and coordinate these various goals in order to effectively implement a national energy strategy.

The main goals of the project are to provide the technical, legal and financial incentives for the promotion of renewable energy in the Republic of Mauritius, on the one hand, and support in bringing about significant grid strengthening to be able to accommodate more renewable energy sources. The GCF project will encourage both public and private actors to invest in renewable energy sources. The public sector will be a long-term beneficiary and promoter of renewable energy through the Mauritius Renewable Energy Agency and the Central Electricity Board. The private sector will benefit from the enabling environment created by the Improving Grid Absorption Capacity component to be able to invest in Independent Power Producers (IPPs) projects.

Relevant Sustainable Development Goals

The GCF project has direct impacts on:

SDG 5 Gender equality	Achieve gender equality and empower all women and girls	The project has the objective to target low-income and women-headed households (most likely inside the low-income bracket also especially in the wake of the pandemic). The project will try to target at least 30% women-headed households, that is, some 1,200 households out of the total of 3,500 low-income households to benefit from a free rooftop solar PV installation.	
SDG 7 Affordable and Clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all	 Target 7.2, "By 2030, increase substantially the share of renewable energy in the global energy mix.". The GCF project will unleash the potential of the national power grid to absorb more intermittent renewable energy and therefore, is the building block to enabling the Government of Mauritius and agencies such as MARENA and CEB, to attain the two-pronged objective of: 35% targeted RE sources in the electricity production mix by 2025¹, as per this project and 60% targeted RE sources in the electricity production mix by 2030, as per the national RE Roadmap 2030. 	
SDG 13 Climate ActionTake urgent action to combat climate change and its impacts		Target 13.b, "Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities"By targeting 3,500 low income households, 2,500 middle income households, some 500 NGOs and some 200 public buildings, the GCF project will exponentially increase the access to clean and affordable energy across a broad spectrum of users in the country.	

The co-benefits generated with support from the GCF funding, e.g., job creation and resilient infrastructure, will also contribute towards SDG 8 and SDG 9, respectively.

The project is consistent with and integrated into the United Nations Country Programme Document (CPD) for Mauritius for the period of 2017 through 2020. The second of two development pillars in the

¹ In budget speech 2022/2023, the target for 2025 was set at 40%

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CPD is "Climate Change and Sustainable Development", and the GCF project is included within Output 1 of the CPD: "Scaled up action on climate change mitigation across sectors which is funded and implemented". In accordance with the UN's focus and expertise on human development, the CPD highlights the importance of focusing sustainable development efforts on the most vulnerable sectors of society, including the poorest areas of Rodrigues and Agalega. The design of the GCF project is fully in line with this development objective. Several activities are being implemented by CEB and URA under the component 2 of the 'Nationally Appropriate Mitigation Actions (NAMA) project for low carbon island development strategy', facilitated by UNDP through the GCF project. Examples include for the development of a toolkit for KPIs and drafting of the Regulations on Tariff and detailed technical study for the Implementation of an Advanced Metering Infrastructure.

Key Components

The project provides for removal of bottlenecks to renewable energy deployment and scale-up of renewable energy in the Republic of Mauritius. The key objective of the project consists of 3 interrelated components designed to achieve the envisaged fund level impact of the project of *"Reduced emissions through increased low-emission energy access and power generation"*:

- Component 1 (Institutional strengthening for renewable energy): The Ministry of Energy & Public Utilities (MEPU) will receive the necessary assistance to develop a fit-for-purpose legal and regulatory framework to allow the ambitious scale-up of renewable energy in Mauritius.
- Component 2 (Improving Grid Absorption Capacity followed by PV deployment): The Central Electricity Board (CEB) will be enabled to acquire and install the equipment necessary to maintain grid operations so that, in total, 185 MW of intermittent renewable energy can be connected to the grid without jeopardising grid stability. In addition, a grant will be provided to enable households, NGOs and public buildings to partially cover the upfront cost of investing in rooftop PV systems.
- Component 3 (PV mini grids on the Outer Island of Agalega): To transform Agalega into the first low-emission inhabited island in the Republic of Mauritius by providing 300 kW PV panels and associated equipment to set up mini-grids.

The three components of the GCF project are designed to reduce dependency on fossil fuels and increase resilience to climate change. By increasing the use of locally-generated renewable energy sources, the project aims to reduce reliance on fossil fuels, which are a major contributor to climate change. In addition, the use of distributed renewable energy generation sources such as PV installations can help reduce transmission and distribution losses, as well as improve recovery from transmission system failures resulting from extreme events. This can be particularly important for essential services such as hospitals and emergency centres, which need a reliable source of power in order to function properly. The GCF project thus aims to help communities become more resilient to the impacts of climate change by increasing their use of clean, renewable energy sources.

To operationalise the NIM UNDP signed subsidiary agreements with

• the Ministry of Finance, and Economic Development (M/FEPD) and responsible parties (entities with delegated execution responsibilities)

- Component 1: Ministry of Energy and Public Utilities (M/EPU) (MARENA and URA),
- Component 2: Central Electricity Board (CEB),
- Component 3: Outer Islands Development Corporation

in accordance with the SBAA.

The executing entity for the project is the Ministry of Finance, Economic Planning and Development (MoFEPD). The latter takes the overall responsibility of the project and has set up a Project Board consisting of the relevant stakeholders.

MARENA and URA, the beneficiaries of Component 1, fall under the purview of the Ministry of Energy and Public Utilities.

Phased Approach

The project is implemented in a **two-phased approach** to reduce the implementation risks and ensure that the second funding disbursement is contingent upon successful completion of the first phase:

Phase I was initially planned to last 3 years (July 2017 – June 2020) as per the FP/FAA, but, due to the Covid-19 pandemic and its adverse impacts on the implementation of Phase I in early 2020, an extension was sought from GCF (and approved) to extend this phase, making the total duration 4 years.

Phase I was de facto considered completed in most parts in autumn 2021, with release of the first disbursement by GCF for phase II in December 2022.

Phase I covered Component 1 and part of Component 2.

Phase 1 put in place the necessary framework for further deployment of renewable energy during Phase 2.

Expected Result for Phase I

By the end of Phase 1,

Institutional strengthening for renewable energy (Component 1)

- the Mauritius Renewable Energy Agency will be empowered and fully operational and will be contributing to the development of the energy landscape of Mauritius, amongst others:
- to assist renewable energy (RE) investors, particularly IPPs, in reducing the transaction costs and time delays currently associated with RE investments.
- to provide technical oversight and policy planning support.

GCF funding will be used to refine the legislative framework for the promotion of Renewable Energy and develop a staffing plan/structure for MARENA that is aligned with the needs of the Long-Term Energy Strategy.

A secondment strategy that will allow experienced CEB and MEPU staff to work at MARENA for limited periods (e.g., 1-2 years), thereby the possibility for building capacity quickly will be explored.

Improving Grid Absorption Capacity followed by PV deployment (Component 2)

- CEB will have completed the centralised elements of its improvement of Grid Absorption Capacity (AGC system and batteries) and grid absorption capacity will have been substantially increased to accommodate a total of 185 MW of intermittent RE. This will consist of investment support to Battery Energy Storage Systems (BESS) and associated training as well as installation of Automatic Generation Control systems in Phase I of the project.

Under **Phase 1**, the following components were executed:

- Component 1: Institutional strengthening of renewable energy, creates a conducive environment for enhanced development and investment into the RE sector in the ROM through the institutional strengthening of the MARENA and the URA. MEPU is responsible for the implementation of this component.
- Component 2: Improving Grid Absorption followed by PV deployment

Following the first independent interim review of Phase I, which confirmed most of the Phase I results were achieved to enable the effective start of Phase II, Phase II of the project started with the release of the first disbursement by GCF for Phase II (fourth disbursement for the project) in December 2021.

As reported in the annual progress reports and confirmed by the first interim evaluation report, the project put in place the necessary policy framework to support further deployment of renewable energy during Phase 2. By the end of Phase 1, the Mauritius Renewable Energy Agency (MARENA) became operational and contributed to the development of the renewable energy landscape of Mauritius. The CEB completed the centralised elements for improvement of Grid Absorption Capacity (AGC system and batteries) and the national electricity grid is now able to accommodate a total of 115 MW of intermittent renewable energy.

Phase II was initially planned to last 5 years, from 2020 to 2024, as per the FP/FAA.

Phase II implementation already kickstarted in early 2022 following the successful completion of Phase I of the project and the receipt of the 4th GCF grant disbursement of approx. USD 4.3 million in December 2021.

Phase 2 builds on experience obtained and frameworks put in place in Phase 1 in order to accelerate the deployment of PV and hybrid buses. The main objective of Phase II is to boost the deployment of renewable energy namely solar PV on rooftops of three categories of buildings: households, NGO buildings and public buildings. It will also see the implementation of a Solar PV powered mini grid on the island of Agalega under Component 3 subject to the necessary clearances from the relevant authorities (PMO, OIDC etc.).

Under Phase 2, the following components are being executed:

- Component 2: Continued Improvement of the Grid Absorption Capacity and PV deployment
- Component 3: PV mini grids on the Outer Island of Agalega

Continued Improvement of the Grid Absorption Capacity and PV deployment (Component 2)

Out of the 185 MW of RE earmarked to be on the national grid, 25 MW will be directly facilitated by the GCF project through its support to a fourth phase of the SSDG scheme. With the appropriate policy frameworks, and grid strengthening, achieved in Phase I, 25 MW of new intermittent renewable power will be supplied by rooftop PV installations, which will target households (10 MW), NGOs (4 MW) and public buildings (11 MW) (see Table 1 below). The PV systems installed under Phase 4 of the Small-Scale Distributed Generation (SSDG) scheme will enable the visibility of the GCF project to be scaled-up, with an expected ~3,927 beneficiaries across all user categories. 25 MW of rooftop PV will be on the (strengthened) grid.

Category of User	Total MW Allocated	Number of Beneficiaries	Average Size of System
Households	10 MW	Approx. 5,500	 Low-income households: 1.5kWp Middle-income households: 2kWp
NGOs	4 MW	Between 300 and 500	• Between 2-5kWp on average
Public buildings (including schools, charitable institutions, orphanages, bus shelters, etc.)	11 MW	Between 300-500	• Between 5 – 30kWp or more
Total	25 MW	Approx. 6,500	

Table 1: SSDG Phase 4 User Categories²

The GCF project will enable the residual 100 MW (through improving Grid Absorption Capacity) but will not be directly involved in financing or supporting these utility-scale installations.

GCF resources will be used to support SSDG Phase 4 users to partially cover the upfront cost of investing in small- and medium-scale PV systems. For households, NGOs and public buildings, the grant will cover 27% of the upfront system and installation cost (with the balance coming from loans (AFD and/or DBM) or users' own resources). This is considered to be a more equitable approach than a feed-in tariff (FiT) (which will be discontinued in Phase 4 of the GCF-supported SSDG scheme) to ensure scaled-up adoption of small-scale PV.

Two tenders for a total of 9 MW have already been launched by CEB (section 4 for more details).

A first batch of 300 kits has already been installed. Also, awareness very much under way. And ADMS and AMI - refer to my email.

PV mini grids on the Outer Island of Agalega (Component 3) Component 3 will build on the PV knowledge, stakeholder networks and market momentum acquired through Components 1 and 2. The principal goal of Component 3 will be to transform Agalega into the first low-emission inhabited island in the Republic of Mauritius, thereby becoming an example for all SIDS.

The project will benefit about 275 residents from the three villages of Agalega and involve upgrading existing PV systems when possible, and installing 300 kW of PV panels with battery storage on the existing mini-grid infrastructure (diesel will only be used as a backup). Training will be provided to 3 technical staff on the island and 5 additional staff on the mainland to serve as backup and provide logistical support if new equipment is needed. The total cost of these efforts will be \$2.1 million, with \$818,000 being financed by the GCF and \$1.2 million coming from co-finance.

Transforming Agalega into the first low-emission inhabited island

Situated at some 1000 km north of mainland Mauritius, Agaléga is a dependency of Mauritius which consists of twin interconnected outer islands located in the Indian Ocean. The population of the islands is estimated at ~300.. The North island is 12.5 km long and 1.5 km wide, while the South island is 7 km

² Number of beneficiaries (for NGOs and public buildings) subject to sizing of the systems s

long and 4.5 km wide; the islands have a total area of ~26 km2. Agaléga is managed by the Outer Island Development Company (OIDC). Agaléga is connected to Mauritius by air and sea. Agaléga has as its capital Vingt-Cinq with its North Island home to a 3-km long airstrip, a government primary school, the police station, the weather station, the central telecommunications office (Mauritius Telecom) and the health service. St James, located on the island's north, provides anchorage off a 500 m pier to the deep sea to vessels of the Mauritius Shipping Corporation. Most homes are in the main villages of Vingt-Cinq and La Fourche on the North Island, and Sainte Rita on the South Island. The road connecting the different localities is sandy and coral. The islands are known for their coconuts, the production of which is their main industry, and for the Agalega day gecko. The economy of the archipelago is based primarily on the exportation of coconut oil. Drinking water comes from rainwater collected by gutters. Water for other uses is sourced from wells.

There is no central electricity grid on the islands; rather, the three villages in Agalega are each served by diesel-powered mini-grids, with electricity supply limited to certain hours. Consumers include the homes, communication equipment, administrative buildings, a small dispensary, and street lighting. Consumption stands at approximately 1,100 litres of diesel per day, necessitating monthly replenishments by ship. The transport of oil drums to Agalega is risky due to the potential for oil spillage in the lagoon and the risk of capsizing in unfavourable sea conditions. The operation ensuring that Agalega is stocked with sufficient diesel fuel is estimated to cost OIDC US\$ 22000 every month, a significant fraction (10%) of its overall operating budget. The result is a territory that is completely dependent upon imported fossil fuel; is running an expensive energy system that prevents needed energy upgrades to schools, clinics and cold storage; and is generating needless greenhouse gas emissions. Agalega thus exemplifies the SIDS characteristics of a highly vulnerable island, highly reliant on fossil fuels.

Exploitable renewable sources of energy on Agalega include ocean energy, biomass and solar energy. The North and South Islands benefit from about 2,000 hours of sunshine per year. This abundance of solar energy can be exploited for the production of electricity. Solar PV, as a decentralised and modular technology, offers a potential solution for reducing Agalega's dependence on diesel. The Ministry of Energy and Public Utilities installed a number of PV systems on the island in 2000 including the PV mini-grid in Vingt Cinq. However, these systems have been mothballed (since 2009) and were not sustained due to a lack of training for island-based technicians and a lack of a systematic sourcing mechanism for spare parts.(see the technical assessment in Annex IId).

Barrier Removal

As outlined in a PV assessment study commissioned by UNDP in 2010 (Annex IId) and a later costing study (Annex IIe), with Agalega's insolation and electricity demand profile, hybrid mini-grids serving the three villages could source ~80% of their electricity from solar power, requiring only relatively minor injections of diesel power. Hybrid system mini-grids (with a mixture of PV, batteries and diesel as back-up) are the most low-carbon option. Coupled with the appropriate power electronics / transformer (for power quality control and regulation), the hybrid system can easily be retrofitted in the utility space available in each village and ensure sufficient and reliable power at all times of the day and night. The design of the system at the capacity stated above will also ensure that diesel generators are only minimally used while ensuring that energy requirements for cold storage and domestic uses

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are comfortably met. This will reduce the amount of diesel imported from mainland Mauritius (hence enhancing autonomy) and also improve the quality of life of the inhabitants through reduced noise / emission levels and increased revenue via boosted economic activities.

By factoring in the increasing domestic load (increase in the number of households with fridges, TV sets and other equipment) and the additional need for cooling during hot days, it is estimated that approximately 300 kW of generation capacity is required on the island with the following load distribution [Removal of Barriers...Annex IId].:

- Vingt Cinq (main economic hub) 150 kW
- La Fourche 75 kW
- Sainte Rita 75 kW

In terms of diesel costs saved, 3 diesel generators (totalling 300 kW) running around the clock with a load factor of 50% will consume 450 litres of diesel daily. This amounts to 164,250 litres per year, representing a total of US\$ 200,385 saved per annum – resources that OIDC is committed to allocating to long-term upkeep and expansion if given the opportunity. The cost per kWp for a solar PV system is currently ~US\$ 2,000. In the context of Agalega, since there is no need to invest in diesel generators, grid infrastructure or civil works, the cost of the total 300 kWp will be ~US\$2,000/kWp, amounting to US\$ 600,000 in total investment.

The principal barrier preventing the villages from operating solar-diesel hybrid mini-grids is technical capacity. OIDC considers building local technical capacity and reinstating and enhancing the current PV systems to be key priorities in order to sustainably use PV technology on Agalega.

Goals and Anticipated Outcomes for Component 3

The principal goal of Component 3 will be to transform Agalega into the first low-emission inhabited island in the Republic of Mauritius. The inhabitants will benefit from this development, which will involve:

- rehabilitation of the existing PV systems where feasible, and
- the installation of an additional 300 kW of PV panels and accompanying battery storage (diesel will only be required as back-up) on the existing mini-grid infrastructure.
- Training will be provided to 3 technical staff on the island and an additional 5 staff on the mainland to act as back-up and to provide logistical support in the event of new equipment being required.

The total cost of these interventions will be US\$ 2.1 million, partially financed by the GCF (US\$ 818,000) and partially from co-finance (US\$ 1.2 million).

Furthermore, there is a broader demonstration value associated with the situation of Agalega for other remote SIDS (such as Kiribati, Niue, etc.), as Agalega exemplifies the SIDS characteristics of a highly vulnerable island, highly reliant on fossil fuels.

Inception Workshop for Phase II (IW2)

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An inception workshop for Phase II, attended by around one hundred professionals, from governmental and nongovernmental organisations, representing different players of the renewable energy and solar PV sectors, was held on 2nd of December 2022 to formally launch Phase II of this project. IW2 emphasised on thetwo main outputs are planned under Component 2 of the project, namely:

- 1. 25 MW rooftop solar PV systems installed and commissioned, and
- 2. A fully fledged Advanced Distribution Management System (ADMS)

alongside other activities such as capacity building for CEB technical personnel as well as women and women entrepreneurs at grassroot and more advanced levels and awareness campaigns for CEB RE schemes.

As mentioned above, the implementation of a solar PV-powered mini grid on the island of Agalega will be subject to obtaining the necessary clearances from relevant authorities. It is important to ensure that all necessary approvals and permissions are obtained before proceeding with any major project, in order to avoid potential delays or issues.

The scope of Phase II is therefore as per below:

- 1. Procurement, installation, testing and commissioning of a total of 25 MW rooftop solar PV systems for three categories of customers: households, NGOs and public buildings.
- 2. A full-fledged Advanced Distribution Management System (ADMS) procured, installed and commissioned.
- 3. Capacity building for CEB and Ministry technical staff
- 4. Capacity building for women and women entrepreneurs in the fields of renewable energy and solar PV
- 5. Workshops and awareness events for CEB RE schemes for the various categories of customers

Considering a one-year delay and approved GCF extension for Phase I, extension for Phase II to account for subsequent one year delay because of the postponement of completion of Phase I, will be discussed following this evaluation.

3.2 Problems that the project sought to address: threats and barriers targeted

The following description of institutional and regulatory, financial and technology barriers is reflecting the description of these barriers in the Project Document (Pro-Doc), sections 14-24 and reflect the barriers identified in the Theory of Change.

Institutional and Regulatory Barriers: Until recently, the legal and institutional framework governing the energy sector in Mauritius was characterised by regulatory deficiencies, including the fact that the dominant power supplier and sole grid operator also acted as the sector regulator. Parliament voted to establish an independent regulator, the Utility Regulatory Authority, in 2005, but the law was only proclaimed in June 2022. The Ministry of Energy and Public Utilities, which has a small team responsible for overseeing the energy, water, and wastewater sectors, has limited capacity to establish and operationalize the Utility Regulatory Authority and the Mauritius Renewable Energy Agency. With the assistance of a GCF project, the Ministry of Energy and Public Utilities has received assistance to develop a fit-for-purpose legal and institutional framework through the Mauritius Renewable Energy Agency and the Utility Regulatory Authority to allow for the ambitious scale-up of renewable energy in Mauritius. The legal and regulatory frameworks include:

- a comprehensive, updated national Grid Code for SSDG and MSDG RE systems;
- Electricity Act 2005, proclaimed since June 2022, giving enhanced powers to URA to regulate the sector;
- Central Electricity Board (Amendment) Act 2020;
- updated regulations covering standards for RE technology and annexed to the Electricity Act 2005;

Financial Barriers: There are financial barriers to the establishment and effectiveness of the Mauritius Renewable Energy Agency (MARENA) and the improvement of grid absorption capacity in Mauritius. The government's budget for MARENA is insufficient to meet its market-catalytic potential, and the budget constraints of the Central Electricity Board represent a significant barrier to improving grid absorption capacity. The Green Climate Fund (GCF) is providing support to address these financial barriers, including funding to improve grid absorption capacity and partially covering the upfront cost of investing in small- and medium-scale photovoltaic systems for low and middle-income households.

Technology Barriers: There are technology barriers to the adoption and integration of renewable energy in Mauritius. At the time the project was conceived, the national grid was only able to accept 60 MW of intermittent renewable energy. With the assistance of the Green Climate Fund (GCF) project for improving grid absorption capacity (GAC), the Central Electricity Board is able to acquire and install the necessary equipment to connect a total of 185 MW of intermittent renewable energy to the grid without jeopardising stability. There are also limited capacity and technical standards for renewable energy technologies (RETs) within Mauritius, including for the design, installation, and maintenance of small-scale photovoltaic systems. In addition, the three villages of Agalega face technical capacity barriers to operating solar-diesel hybrid mini grids.
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3.3 Project strategy (objective, outcomes and expected results, description of project sites)

Project Objectives

The project aims to increase the share of renewable energy in Mauritius' energy mix, and reduce the country's reliance on imported fossil fuels. It does this through the implementation of several activities, including:

- Promoting the adoption of renewable energy technologies, such as solar PV panels, through the establishment of a Small-Scale Distributed Generation (SSDG) scheme.
- Strengthening the capacity of the Mauritius Renewable Energy Agency (MARENA) and the Central Electricity Board (CEB) to develop and implement policies and regulations that support the adoption of renewable energy.
- Improving the grid's absorption capacity through the installation of grid-connected batteries, to enable the integration of larger amounts of renewable energy into the grid.
- Providing financial and technical assistance to small and medium-sized enterprises to help them adopt renewable energy technologies.
- Supporting the development of Independent Power Producers (IPPs) through the provision of financial and technical assistance.

Overall, the project aims to contribute to the development of a low-carbon economy in Mauritius, and support the country's efforts to mitigate and adapt to the impacts of climate change.

Project Description and Outputs

Overall, the goal of the GCF project is to help Mauritius increase its use of renewable energy and reduce its reliance on fossil fuels.

Component 1

Green Climate Fund (GCF) is providing support to the Mauritius Renewable Energy Agency (MARENA) to help it effectively promote and facilitate the development of renewable energy in Mauritius. MARENA is intended, amongst others, to:

- assist renewable energy (RE) investors, particularly Independent Power Producers (IPPs), in reducing the transaction costs and time delays associated with RE investments.
- to refine the legislative framework for the promotion of renewable energy
- to develop a staffing plan/structure for MARENA that aligns with the needs of the Long-Term Energy Strategy.
- as a secondment strategy, to allow experienced staff from the Central Electricity Board (CEB) and the Ministry of Energy and Public Utilities (MEPU) to work at MARENA for limited periods in order to build capacity quickly.

GCF's support was extended to the URA for the establishment and operationalization of a management information system (MIS). This included the procurement of servers and other ICT equipment followed by their installation, configuration, and commissioning. As part of the operationalization of the MIS, the project supported the elaboration of a training plan and the delivery of a training on the MIS

Component 2

The Green Climate Fund (GCF) project in Mauritius will facilitate the development of 185 MW of renewable energy capacity on the Mauritian grid. This will be achieved through a number of measures, including investment support for battery energy storage systems and associated training, as well as the installation of Automatic Generation Control systems in Phase 1 of the project. In Phase 2, the GCF project will directly facilitate the development of 25 MW of renewable energy capacity through its support for a fourth phase of the SSDG (Small Scale Distributed Generation) scheme: photovoltaic (PV) systems on rooftops of households, NGOs, and public buildings. The GCF will provide resources to cover an average of approximately 27% of the upfront system and installation costs for these PV systems, with the balance coming from loans or the users' own resources. This approach is considered to be more equitable than a feed-in tariff (FiT), which will be discontinued in Phase 4 of the GCF-supported SSDG scheme, in order to encourage the widespread adoption of small-scale PV systems. The GCF project will also support the development of an additional 100 MW of renewable energy capacity by improving the grid's absorption capacity, but it will not be directly involved in financing or supporting these utility-scale installations. Overall, it seems that the goal of the GCF project is to help Mauritius increase its use of renewable energy and reduce its reliance on fossil fuels.

Component 3

Component 3 of the GCF project is focused on transforming the island of Agalega into the first lowemission inhabited island in the country. This will involve rehabilitating existing PV systems where feasible, and installing an additional 300 kW of PV panels and accompanying battery storage on the existing mini-grid infrastructure. The PV systems will be designed to be largely self-sufficient, with diesel serving as a back-up power source only. Training will be provided to 3 technical staff on the island, as well as an additional 5 staff on the mainland, to act as back-up and provide logistical support in the event of any equipment issues. The total cost of these interventions is estimated to be \$2.1 million, with the GCF providing \$818,000 in funding and the remaining cost being covered by co-finance. It seems that Component 3 is intended to build on the PV knowledge, stakeholder networks, and market momentum developed through Components 1 and 2 of the project.

3.4 Project implementation arrangement

The project is being implemented following UNDP's national implementation modality (NIM), with as implementing partner (IP) (i.e., executing entity in GCF terminology) the Ministry of Finance, Economic Planning and Development (M/FEPD). The M/FEPD oversees the project execution and ensures that it is implemented in accordance with the applicable national policies. The Project Board (PB), chaired by a representative of the M/FEPD, is the executive body responsible for making, by consensus, management decisions when guidance is required by the Project Coordinator (PC) as well as Component-level Project Managers. The PB provides overall guidance and direction, addresses project issues, reviews project progress and reviews and endorses annual work plans and budgets. It convenes semi-annually or additionally when needed on demand. Responsible Parties for each Component under the project are:

- Component 1: MEPU
- Component 2: CEB
- Component 3: Outer Islands Development Corporation

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Each project component is overseen by a Project Director from the responsible party. At Component level, the governing entity is the Project Sub-Board. Each Project Director chairs the respective Project Sub-Board consisting of relevant stakeholders and meets on a quarterly basis. A Project Manager (PM) runs each component on a day-to-day basis on behalf of the relevant Responsible Party within the constraints laid down by the Board and the Sub-Boards. As with the PB, each Sub-Board is responsible for making, by consensus, management decisions when guidance is required by the PC and/or relevant PM. The PMs for Component 1 and Component 2 sit at MARENA and CEB respectively. The Project Management Unit (PMU), housed at the UNDP, runs the project on a day-to-day basis and is responsible for the day-to-day management and decision-making. The unit ensures that the project produces the targeted project results, to the required standard of quality and within the specified constraints of time and cost. UNDP provides oversight and quality assurance involving the UNDP country office (CO) and regional and headquarter levels. As an accredited entity to the GCF, UNDP delivers GCF-specific oversight and quality assurance services as an operational arm of the GCF and accountable to the GCF board, as reflected in the Accreditation Master Agreement (AMA) between UNDP and the GCF. The services include fund management, project design and development and project implementation, including quality assurance of annual work programmes/budgets, progress and financial reporting and support to monitoring and evaluation missions.

3.5 Project timeline and milestones

- Funding Proposal submitted on 30 July 2015, GCF Board approval on 14th Dec 2016
- FAA signed on 8th June 2017, entered effectiveness on 11 July 2017.
- ProDoc signed on 1st August 2017
- Inception Report of 10 January 2018, based on the Inception Workshop of 9th and 10th Nov 2017
- Updated time frame for Phase I: July 2017 to October 2021³ (following approved extension request granted by GCF on 20 October 2020)

• Time frame for Phase II: November 20211- July 2025

• First interim evaluation report - Phase I: 20 October 2021

• Phase II Inception Report of 2nd December 2022, based on the Inception Workshop of 2nd December 2022⁴

- Second interim evaluation: Within six (6) months after Year 5 11 January 2023
- Closing Date: 11 July 2024 (7 years after 'Effective' date)
- Completion Date: 11 July 2025 (8 years after 'Effective' date)
- Completion report, within 3 months after completion date
- Final independent evaluation report, within 6 months after the completion date

3.6 Summary of main stakeholders

The main stakeholders and their functions and responsibilities are described in the Table 2.

³Strictly speaking, Phase II begins until the 4th disbursement is received, which is conditional on approval of IE1 by GCF. The 4th disbursement from GCF was received in December 2021.

⁴ Strictly speaking, not a milestone - but for internal consumption only

Table 2: Project main stakeholders

STAKEHOLDER	RESPONSIBILITY
Ministry of Finance, Economic Planning and Development (MoFEPD) <i>Executing Entity</i>	Responsible for coordination of all development partners, including multilateral funding agencies, regarding external assistance, including budget support programmes, grants, loans and technical assistance. All such external assistance is overseen by the Resource Mobilisation, Development Cooperation and Regional Initiatives Directorate of the Ministry who has been heavily involved in the formulation of the GCF project proposal.
Ministry of Energy and Public Utilities (M/EPU) <i>Responsible Party for Component 1</i>	 Has the mandate to formulate policies in the energy, water, and wastewater sectors, and to maintain a responsive legal framework to govern these sectors. The following organisations directly related to the electricity sector fall under the purview of MEPU: Central Electricity Board (CEB) Mauritius Renewable Energy Agency (MARENA) Energy Efficiency Management Office (EEMO) Utility Regulatory Authority (URA)
Central Electricity Board (CEB) Responsible Party for Component 2	State-owned enterprise operating under the direct reporting line of the Ministry of Energy and Public Utilities. CEB is responsible for generation (in collaboration with IPPs), transmission and distribution of electricity in Mauritius. CEB manages the database of electricity consumers and prosumers.
Outer Islands Development Corporation (OIDC) <i>Responsible Party for Component 3</i>	Responsible for the management and development of the Outer Islands and advise the Minister on (i) the development of such activities as may lead to a more economic exploitation of the Outer Islands and (ii) the grant or determination of leases over the Outer Islands on such terms and conditions as shall warrant their optimum use.
Mauritius Renewable Energy Agency (MARENA) Direct beneficiary of the project	Body corporate, owned by the Government of Mauritius, which operates under the aegis of the MEPU and is regulated by the MARENA Act of 2015. It is responsible to promote renewable energy and create an environment conducive to the development of renewable energy.
Utility Regulatory Authority (URA) Direct beneficiary of the project	Set up in 2016 in accordance with the Utility Regulatory Authority Act 2004 to regulate utility services, namely electricity, water, and wastewater. The URA started operation in November 2016. The Electricity Act 2005, proclaimed in June 2022, is key for the URA to fully exert its powers.
Ministry of Environment, Solid Waste Management and Climate Change (M/ESWMCC) Member of the Project Board and Sub- boards	Has the mandate to devise appropriate legal and policy framework regarding environment related issues such as climate change to effectively respond to emerging challenges.
Agence Francaise de Developpement (AFD) Member of the Project Board and Sub- boards	Operating in Mauritius since 1975. After ceasing its development aid activities in 1995, due to the level of development achieved by the island, since 2006 it has been supporting its economic and ecological transition. It is involved primarily in the areas of infrastructure, energy transition, climate, and regional cooperation. <i>Co-financing the project to an amount of USD 37.9 million</i>
Business Mauritius (BM) Member of the Project sub-board for Component 2	Independent association that represents over 1200 local businesses. It is the coordinating body and the voice of local business.
The University of Mauritius (UoM) Member of the Project Board and Sub- boards representing academia	National university of Mauritius. It is the oldest and largest university in the country in terms of student enrolment and curriculum offered.

National Women's Council (NWC) Member of the Project sub-board for Component 2	Parastatal body operating under the aegis of the Ministry of Gender Equality, Child Development and Family Welfare, works towards the promotion of women's empowerment and gender equality. It plays a major role in the implementation of awareness-raising workshops and training sessions for women.				
National Empowerment Foundation (NEF) Member of the Project sub-board for Component 2 involved mainly in Phase II	Not-for-profit government owned company operating under the aegis of the Ministry of Social Integration and Economic Empowerment as its executive arm. It aims to provide the most vulnerable people with the ability to improve their living conditions.				

Ministry of Gender Equality and Family Welfare (M/GEFW)	M/GEFW is responsible for promoting gender equality and the welfare of families in the country. This includes implementing policies and programmes to support gender equality and women's empowerment, and addressing issues related to gender-based violence and discrimination. The ministry also has a mandate to support the welfare of families in Mauritius, including promoting the well-being of children, the elderly, and people with disabilities. To achieve these goals, the ministry works in partnership with other government agencies, NGOs, and community-based organizations, and engages in advocacy and awareness-raising efforts to promote gender equality and the welfare of families in Mauritius.
Mauritius Council of Social Service (MACOSS) Member of the Project sub-board for Component 2	The MACOSS was established in 1960 with the goal of improving the social and economic conditions of disadvantaged groups in Mauritius, such as women, children, the elderly, and people with disabilities. MACOSS (a Body Corporate) is the Council and National Platform of NGOs which strive for the betterment of its members and in networking between the NGOs, the Government and Private sector. It encompasses registered NGOs in executing tasks linked to social and sustainable development. With a membership of 204 organisations, MACOSS' role is to foster cooperation between NGOs, government departments and the international community. MACOSS is jointly funded by the European Union, embassies in Mauritius, and the Canada Fund.
Development Bank of Mauritius (DBM) Member of the Project Board for Component 2	The Development Bank of Mauritius (DBM) is a state-owned development finance institution based in Mauritius that provides financial assistance to projects that contribute to the economic and social development of the country. It was established in 1971 with the goal of promoting economic development in Mauritius by providing financing and support to a variety of sectors, including agriculture, industry, tourism, and infrastructure. The DBM provides a range of financial products and services, including loans, equity investments, guarantees, and technical assistance, to support the development of small and medium-sized enterprises, as well as larger projects that have significant development impacts. The DBM also works closely with other development partners and institutions to provide financial and technical support to projects in Mauritius and the region.

4. Findings of IE

4.1 Project strategy

The funding proposal and project document (Pro-Doc) for this project were well-written and based on a thorough consultation process with national stakeholders.

4.1.1 Project design

The Theory of Change and intervention strategy as applied to this project, shown in Figure 2:

- is logical and coherent in its description of its intervention strategy;
- are aligned with national development policies, as reflected in the Funding Proposal and the ProDoc, and reiterated in the 2020-2024 Government Programme and recent budget speeches;
- incorporated gender analysis;
- incorporated risk mitigation strategies.

It aims to address the above barriers to deployment and scale-up of renewable energy, in the form of improvements to the GAC, the institutional strengthening of URA and MARENA and capacity development of RE personnel.

An enabling environment will then have been created for the country to use more low-emission renewable energy technologies enabling it to meet its target of using 35% of renewable energy in the electricity grid by 2025.

The chosen project strategy, with three closely interlinked components each targeting specifically at a set of barriers, provides an effective route towards the intended result of a low carbon emission economy. It is also well aligned with national development policies. A gender analysis was undertaken to enable gender mainstreaming throughout the project implementation as well as a thorough risk analysis with appropriate risk mitigation strategies worked out. In the project design the overall grant to co-financing ratio for the project duration is approximately 1:6 and the project proposes a good mix of GCF grants, AFD loans and Government's own resources to bring about the transformational change to energy systems being sought by the GCF.

Project design, alignment and relevance

The project design analysed well the context, problem, needs and priorities.

The project was developed following a broad consultation process with the executing entity and other national stakeholders and is backed by sound technical and financial analysis as well as strong political will. The Funding Proposal and ProDoc incorporate lessons from a series of other relevant past UNDP projects. The project design involved the identification and integration of specific activities into the funding proposal and project document which were geared at achieving the envisaged results under each project component. Hence, the project scope, deliverables and targets cannot be easily changed.

While evidence of adaptive design/management could not be identified in the funding proposal and project document, the project has so far taken several adaptive management measures in the course of its implementation as discussed under section 4.5.1.





4.1.2 Results Framework / Log frame (indicators)

A results framework, also known as a logical framework or logframe, is a tool used to plan, monitor, and evaluate projects. It helps to clarify the project's goals, objectives, and expected outcomes, as well as the activities and resources needed to achieve them. The Results Framework of the project as given in the Pro-Doc and funding proposal and as revised during inception are given in Table 3. The project objectives, different components of the project, the outcomes and outputs as mentioned in the Pro-Doc are clear and practical.

It is common for projects to experience delays due to various factors, including administrative issues and the impact of events such as the COVID-19 pandemic and Russia-Ukraine war. If the project is not able to be completed within the original timeframe, it may be necessary to request a time extension in order to achieve the desired outcomes and outputs. It is important to carefully assess the impact of the delays on the project and determine the necessary steps to ensure that the project can still be successful.

Due to a delay of nine months (about 25% of the overall time frame for Phase I) in the actual start of the project, it might be very difficult to complete Phase II in 4 years without a time extension to the project. More details regarding the time extension required to achieve the outcomes and outputs of Components 2 and 3 of the project is provided in the next section (Progress towards Results).

The Indicators

The Project Results Framework of the project in the ProDoc and funding proposal has two project outcomes with three indicators and three distinct project outputs (for phase 2) with a total of five indicators (Table 3). It is to be noted that the results framework has mid-term and end-of-project targets for the project outcome indicators over the whole timeframe of the project (8 years) as well as mid-term and end-of-phase targets for the project outputs for both Phase I (3 years) and Phase II (5 years). While the project components, objectives and outcomes are clear and practical, it is unlikely that it will be feasible for phase 2 of the project to be completed within the set timeline without the need for an extension, owing to the fact that some implementation time was lost under phase 1 due to the Covid-19 pandemic. For this reason, the implementation period for phase 1 extended into some of the period that was scheduled for phase 2 implementation.

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	Logframe Indicator	Suggested Revision			
Fund level Impact: M1.0 Reduced emissions through increased low- emission energy access and power generation	Tonnes of carbon dioxide equivalent (tCO2eq) reduced or avoided as a result of Fund funded projects / programmes	No revision			
Project Outcome: M5.0 Strengthened institutional and regulatory systems	Institutional and regulatory systems that improve incentives for low-emission planning and development and their effective implementation	Extent to which institutional and regulatory systems that improve incentives for low-emissions planning and development are under implementation			
Project Outcome: M6.0 Increased number of small, medium and large	Proportion of low-emission power supply in a jurisdiction or market	Proportion of RE generated in the electricity mix in a jurisdiction or market			
	Γ				
low-emission power suppliers		Installed capacity of intermittent RE power supply in a jurisdiction and market.			
	Number of households, and individuals (males and females) with improved access to low-emission energy sources	Number of electricity customers using RE. Number of households with rooftop solar PV Panels.			
	PHASE TWO				
Project Output:	Advanced Distribution Management system	Advanced Distribution Management system operational			
2.2 Smart griu	Smart Grid Strategy	Smart Grid Strategy developed			
Project Output: 2.3 PV deployment	Actual MW installed by category (gender- disaggregated data)	No revision			
Project Output:	Capacity of PV systems installed	No revision			
3.1 PV mini-grids on the outer island of Agalega	Number of OIDC staff trained				

Table 3: Results Framework

The revised logical framework of the project was analysed in order to determine the extent to which the project indicators and targets are Specific, Measurable, Achievable, Relevant, Time-bound (SMART). As presented in Table 4, all the SDG, fund level impact and UNDP strategic plan indicators were found to be compliant to the SMART criteria. One of the project outcome indicators and two of the output indicators under phase 1 were not found to be fully compliant to the Specific and Measurable criteria. The evaluators understand that the outcome indicators are pre-set by the GCF result framework and could not be altered by the accredited entity. The non-complaint outcome indicator was part of phase 1 which has been completed. Hence, no need for revision as this will be retroactive. The same is true for the two non-compliant outputs under phase 1 of the project.

Table 4: IE2 SMART analysis of the project's objective and outcome indica	tors
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Indicator	End-of-project Target	Terminal evaluation SMART analysis		Terminal evaluation SMART analysis		Ter SI		Terminal evaluation SMART analysis		Terminal evaluation SMART analysis		Terminal evaluatior SMART analysis		tion sis	Evaluators' feedback
		S	M	A	R	Т									
GCF Paradigm shift objective: Shift to low-emission sustainable develo	opment pathways.														
SDG Indicators															
Indicator 13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities	1														
Indicator 7.2.1: Renewable energy share in the total final energy consumption	35%														
UNDP Strategic Plan Indicators															
Indicator 1.4.2: Number of countries with comprehensive measures - plans, strategies, policies, programmes and budgets - implemented to achieve low-emission and climate-resilient development objectives	1														
# direct project beneficiaries	441,315														
Fund level impact															
M1.0 - Tonnes of carbon dioxide equivalent (tCO2eq) reduced or avoided as a result of Fund funded projects / programmes	190,951 (direct) 472,311 (indirect)														
Project outcomes															
M5.0 - Institutional and regulatory systems that improve incentives for low-emission planning and development and their effective implementation	-MARENA having capacity to recommend to M/EPU on-grid policies and implementation						The framing of the indicator does not make it very specific. What about the								

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	measures for uptake of renewable energy such as regulations for PV technicians in line with its work plan -National Grid Code and tariff methodology fit for the RE market expansion adopted by the relevant authorities.			institutional and regulatory systems? Should the systems be in place? For matters pertaining to the grid code, it is rather URA. In fact, URA is currently preparing Regulations on URA working on the Regulations on Tariff and Renewable Energy with the support of NAMA.
M6.0 - Proportion of low-emission power supply in a jurisdiction or market	35% in 2024			
M6.0 - Number of households, and individuals (males and females) with	129,500 households			
improved access to low-emission energy sources	Males: 218,450			
	Females: 222,865			
Project Output Phase 1 (2017 – 2019)				
Output 1.1 - Renewable Energy Agency Act in place	MARENA functioning as a fully-			The indicator makes reference to institution staffed by mid-term Which
Institution staffed by mid-term				institution does the indicator refers to?
	least 6 women			compliant to the Specific criteria.
Output 2.1 - Software purchased	All equipment installed and grid able to accept a total of 185 MW			The indicator makes reference to software purchased – what type of
Battery energy storage system procured	installed RE capacity			software is to be purchased and what quantity? This renders the indicator non- complaint to the specific and measurable criteria

Project Output Phase 2 (2020 – 2024)			
Output 2.2 - Advanced Distribution Management system	ADMS completely installed.		
Smart Grid Strategy	Long-term smart grid strategy developed.		The Advanced Distribution Management System (ADMS) is a computer-based system for the remote control and monitoring of the distribution network. It thus comprises both software and hardware. It is basically a network of smart switches to be deployed all over the grid for enhanced control. It is one of the smart grid strategies employed by CEB for a more efficient and reliable grid. There is no exact identification of the scope of the ADMS part of this project in neither the Prodoc nor the Funding Proposal. The only data available was a budget of around USD 1.6M. The scope of the ADMS can be extremely large and therefore costly. For instance, CEB feels they will require at least 300-400 Load Break Switches (LBS) and the associated FRTUs to cover the whole island. However, given that around USD 1.4M already on hardware (out of USD 1.6M budget), the balance has been reserved for a consultancy exercise in 2023. The indicator is therefore compliant as one of the smart grid strategies for a more efficient and reliable grid. It must be stressed that, at the last PB in October 2022, CEB reported that it was not

 SMART criteria compliant
 Questionably compliant to SMART criteria
 Non-compliant to SMART criteria

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4.2 Relevance

The project is fully aligned with the following key Government policies and strategies:

- •
- The Second and Third National Communication to the UNFCCC (2010 and 2016)
- BUR1 2021
- The UNFCCC Technology Needs Assessment (2012)
- The Nationally Determined Contribution (NDC) Action Plan (2015)
- The Updated Nationally Determined Contribution (2021)
- The Renewable Energy Roadmap 2030 for the electricity sector
- The 2005 Electricity Act (proclaimed in June 2022)
- Central Electricity Board (Amendment) Act 2020
- The Climate Change Act (2020)
- The National Gender Policy Framework

The GCF project was developed in 2015 with the goal of increasing the use of renewable energy (RE) in Mauritius and strengthening the operations of the Mauritius Agency for Renewable Energy (MARENA). These goals were formulated in accordance with the Long-Term Energy Strategy (LTES) of Mauritius. In 2019, the Renewable Energy Roadmap 2030 was released, which set a target of at least 35% RE in the energy mix by 2025 and 40% by 2030, and specifically referenced the GCF project as a key contributor to this goal. Despite setbacks caused by the COVID-19 pandemic, the Mauritian government remains committed to decarbonizing the economy and has even set more ambitious targets, including producing 60% of the country's energy needs from green sources by 2030 and phasing out the use of coal before 2030. These targets have been reflected in recent government's budget speeches, which mention various activities facilitated by the GCF project. The GCF project has been credited by stakeholders as paving the way for more ambitious RE targets and is seen as timely and relevant. The transition to a low carbon economy is also more important for the government due to the economic impact of the pandemic, as reducing reliance on fossil fuel imports will create fiscal space to recover from the pandemic's effects. Consequently, the design of the project is still relevant as the needs it envisaged addressing are still valid. Indeed, the relevance of the project design and deliverables have increased by virtue of the increased RE commitment of the government as expressed in country's the revised NDCs. Furthermore, the recent Russia-Ukraine crisis led to the disruption of the supply chain of fossil fuel, leading to hiking fuel crisis. This renders the deliverables of the project more valid and these would strengthen the resilience of the energy sector of Mauritius towards external shocks.

4.3 Effectiveness and Efficiency

Overall, the GCF project has made substantial progress in achieving its targets for Phase I with almost remaining activity lines since IE1 have been completed by the end of 2022 (see Appendix D). The project management unit (PMU) team has demonstrated adaptability in coping with various delays and constraints, including those caused by the COVID-19 pandemic. While the project experienced delays in recruitment and a slower start, it has made up for lost time and has demonstrated increasing efficiency over the years. The project has had satisfactory financial delivery efficiency, with a total delivery of over 95% in Phase 1. The planned inputs and strategies have been appropriate and adequate in addressing the barriers identified during project design.

The introduction of grid strengthening measures as part of the GCF project has attracted private sector investment for 81.5 MW of intermittent renewable energy (RE) by August 2021. This has contributed to an increase in intermittent RE generation, which rose from 53.8 GWh in 2017 to 64.5 GWh in 2018,

143.7 GWh in 2019, and 163.8 GWh in 2020. The increased installation of intermittent RE power on the grid (115.5 MW as of August 2021, compared to 34 MW at the start of the project) has also resulted in indirect emissions reductions, with an estimated avoidance of 181,500 tonnes of CO2e due to increased grid absorption capacity for intermittent RE.

The co-financing ratio for the GCF project in Phase I was approximately 2:1, with significant funding coming from the Mauritian government and the Central Electricity Board (CEB). However, if procurement issues and delays in the disbursement of an AFD loan had not occurred, the ratio would have been 1:2. There were significant delays in the procurement of a 14 MW battery energy storage system (BESS) due to technical evaluation, appeals from unsuccessful bidders, the impact of COVID-19 on the supply chain, and damage to a shipment of batteries that had to be replaced. As a result, a request for an extension of Phase I was made in order to show concrete deliverables, which was approved.

The project has received unplanned co-financing from sources such as the Development Bank of Southern Africa (DBSA) through a grant from the Southern African Development Community (SADC) Secretariat. With the help of URA, MARENA had spearheaded several consultancies services related to the establishment of a National Grid Code and the development of standards, funding, and incentive strategies for renewable energy which were all brought to fruition (see Appendix D). These have paved the way for setting up a conducive environment for promotion of renewable energy.

There are currently negotiations with regards to the procurement of 10 GIS substations with AfDB. These units are intended for increasing reliability of the grid with the massive RE deployment envisaged. Engagement of MO/FEPD with the AfDB is quite likely, according to the M/FEPD representative, resulting in this financing given that the implementation of the project is crucial to contribute towards reliably achieving the Renewable Energy Target of 60% by 2030. The AfDB is currently finalising the Project Appraisal Report which will be presented to its Board by March. The CEB is expected to launch the procurement exercise by the end of March.

As far as Phase II is concerned, DBM has been willing to come in for parallel financing as a replacement for the depleted funding from AFD SUNREF programme. This constitutes a great success and example of good adaptive (and proactive) management. PMU has proactively assessed risks - engaged co-financiers and governments, facilitated meetings to resolve issues to the extent possible, mobilised new co-financing from DBM for phase II, as well as from CEB to increase their subsidy portion for phase II. Project team has actively followed up with the government and others and kept them briefed, explaining the risks in detail etc. and sought consensus on various issues among project stakeholders beyond the usual meetings. This was a very busy year for the team, which given the constraints (resignation of project coordinator in December 2021) has done a great job trying to keep the project on track. PMU has prepared impact analysis, considering the project issues and kept the donor also informed beyond the regular APRs once a year.

4.4 Progress towards results

4.4.1 Progress towards outcomes analysis

Phase I Status

The text below summarises the progress towards the end-of-phase I targets with specific information per output and indicator. In this Progress Towards Results Matrix information is presented based on the stakeholder interviews, progress reports and the results framework (Table 4).

Phase 1 Component 1

The status of activities and actual achievements for the outputs at the end of Phase I are captured in Appendix D.

The GCF project under Output 1.1 has had a significant impact on the deployment of renewable energy in Mauritius The project has contributed to the completion of consultancies and the drafting of legislation and regulations, proclamation of the Electricity Act 2005 and the harmonisation of the Central Electricity Board Act 1964, which establish the foundations for the deployment of renewable energy in the country. In addition, the project has helped to strengthen MARENA and URA with a range of development (see Box 1).

BOX 1: Output 1.1

Institutional strengthening of the Mauritius Renewable Energy Agency and of the Utility Regulatory Authority (URA)

Thanks to the support of the project, an enabling environment has been created through an enhanced policy and regulatory framework and the strengthening of URA and MARENA, namely through:

- the setting up of dedicated Enterprise Resource Platforms (ERPs) for each entity;
- the implementation of a Management Information Systems (MIS for each entity; Through the MIS, MARENA can automate its administrative and financial systems while the URA has an up-to-date website including a web-based application for its online licensing system integrated with its financial system and a web application for registering complaints;
- servers and related equipment for URA to operate efficiently;
- drafting of a number of policy documents;
- proclamation of the Electricity Act in June 2022;
- the integration of the MARENA (Standards for Renewable Energy Technologies) Regulations 2021 under the MARENA Act - to assist in determining the conditions to obtain a Renewable Energy (RE) Certificate necessary to manufacture, supply or import renewable energy technology goods into Mauritius;
- the integration of the Renewable Energy (Accreditation Mechanisms for Operators) Regulations 2021 under the MARENA Act - which defines the conditions under which a Renewable Energy and Related Technologies (RERT) Technician or Installer shall obtain the required licence to provide RERT services;
- National Grid Code development for the Electricity Sector in Mauritius; the Grid Code contains principles, operating procedures, and technical standards governing the operation of the electricity system and all interconnected generating facilities required to be used by the key players in the electricity sector;
- Tariff Methodology and Guidelines development for each sub sector in the electricity market.
- MARENA (advisory arm of Government) is spearheading the RE roadmap as well as climate targets,
- M/EPU's commitment for continued funding MARENA Operational Plan
- Development of innovative new schemes such as National Scheme for Emerging/Innovative Renewable Energy Technologies (NSEIRET) projects launched by MARENA in collaboration with the Mauritius Research and Innovation Council (MRIC) and CEB.
- necessary tools and techniques for assessing RE projects; Examples include the online Project Evaluation toolkit (PET), a Levelized Cost of Electricity (LCOE) toolkit. The PET tool is being used to analyse the NSEIRET. The LCOE tool helps experts in strengthening their capacity in undertaking financial and economic analysis so that they can provide advice to decision-makers in renewable energy investments.

- Communication and Branding Strategy for MARENA;
- awareness sessions and scholarship scheme launched by MARENA aimed at technical training for women entrepreneurs which will help in the deployment of solar panels in Phase II;
- Renewable Energy Strategic Plan (RESP) of MARENA (2018-2023) as required by the MARENA Act 2015;
- Range of technical reports (more than 30) have been prepared for policy planning and project evaluation and implementation: Examples include (i) Report on socio-economic analyses of energy sources with an Excel tool to analyse the impact of implementation of energy systems. It is being used to review the roadmap. (ii) Report on Incentive Schemes for the Development of Renewable Energy. (iii) Report on Funding Strategies and Schemes for Accelerating RE Transition. (iv) Report on Framework for Green Jobs in the RE Sector (which will be included as an addendum to the RE Roadmap 2030). (v) Feasibility study for floating solar PV. This assessment led to a proposal to include the costs of installation of a 2 MW solar PV plant as a national budget measure in the Government Budget 2020/2021. (vi) Report on guidelines, norms and standards and institutional requirements for implementation. (vii) Report on Institutional Mapping of the Electricity Sector in Mauritius. (viii)Report on an operational framework for MARENA to efficiently deliver services in a customer-friendly, transparent and timely manner as a one-stop-shop for energy investors. (ix) Report on the institutional processes and policy recommendations for implementing and ensuring compliance with the guidelines and various standards set for different RETs;
- Capacity Needs Assessment and HR roadmap for both MARENA and URA. The report for MARENA would allow the successful implementation of the RESP (2018-2023). The HR roadmap has been used for consolidating the submission of MARENA to the Pay Research Bureau (PRB) aimed at adequately staffing MARENA and improving the conditions of service of the personnel that would enhance recruitment at MARENA and decrease staff turnover;
- A Budget/Costing Plan for implementation of the RESP of MARENA (2018-2023)
- A Monitoring, Evaluation and Reporting Framework for the implementation of the RESP of MARENA (2018-2023).
- At IE1, 10 staff at MARENA (5 female staff including the CEO) and 14 staff at URA (9 female staff including the CEO) were in place. Recruitment of 3 additional staff at MARENA was envisaged at IE1. However, at IE2, the situation at MARENA is considered as alarming with only 3 staff (only one technical) and 11 staff at URA (5 female staff)
- MARENA staff have successfully completed the following online courses related to Renewable Energy: Renewable Energy Management and Finance; Renewable Energy Solutions; Solar photovoltaic; Electrics for Renewables; Wave and Hydro Power; Biomass; Project management for renewable energy projects. However, the two staff members have left MARENA.
- awareness materials including a booklet on Solar Photovoltaic (in English and Mauritian Creole) have been developed for awareness raising.
- a total of 1503 women at grassroots level have been sensitised on renewable energy through awareness sessions. It has helped these women to better understand the principles of RE and its benefits and stimulate their interest in the deployment phase (Phase 2) of the project, which will see low-income households benefit from rebates for solar PV equipment. The feedback gathered from the awareness session was used to also formulate a training programme on women entrepreneurship and basics of PV. Awareness sessions have been impacted by Covid 19.
- 89 women have benefitted from a non-award training on 'Women Entrepreneurship and Basics of Solar PVs' delivered by the Mauritius Institute of Training and Development

(MITD). The main objective of the training was to provide women employed or running micro/ small enterprises an entry level understanding of entrepreneurial skills and an overview on the technical requirements for the installation, operation, and maintenance of solar PV systems. The overall evaluation of the training, as captured by the participants in an anonymous evaluation sheet, was rated "very good". The training cost was initially planned to be covered under the GCF component 1 project. However, the Clinton Climate Initiative under the Clinton Foundation proposed to fund the training as part of its capacity building initiatives for 2020. Thus, the amount paid by the Clinton Foundation in 2020 has been accounted for as a cost sharing of the MEPU to the GCF project. Given the successful implementation of the training and the cost savings achieved, the Sub Board for component 1 approved the continuation of the training in 2021 to include men as well funded by the GCF project.

As per the Energy and Water Statistics from Statistics Mauritius, the intermittent RE generation grew from 53.8 GWh (with approx. 35 MW IRE connected) in 2017, to 166.7 GWh in 2021 (approx. 115.5 MW of IRE connected), respectively; the (project) baseline maximum grid absorption capacity of 60 MW IRE (or 97.2 GWh annual generation) was surpassed as from 2020 with the 18 MW BESS being fully installed and commissioned (the last 4 MW was commissioned in December 2021).

Using the same value for 2022 as for 2021, the already connected 18 MW BESS has contributed to an increased capacity of around 55.5 MW, which resulted in production of approximately (252.2 GWh of clean energy into the grid, thereby indirectly avoiding about 259.1 ktCO2e in Phase I till Dec 2022 (based on a grid emission factor of 1.0273 tCO2e/MWh).

The project is expected to achieve a total of 663 ktCO2e of GHG emission reductions by the end of the project, with 191 ktCO2e coming from direct emission reductions and 472 ktCO2e (see revised logframe attached) coming from indirect emission reductions as per the approved Funding Proposal (FP)- Well on track.



Figure 3: Electricity generated (GWh) from intermittent renewable energy sources

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Of the 3 MW (2,000 x 1.5kWp for low-income households under HSP Phase II), nearly 0.5 MW have already been installed and commissioned. The direct emissions reductions attributable to the project will result from the direct installation of PV Phase II is estimated to be 2.6 ktCO2e deployed for a full year.

Component 1 remaining activities:

Overall, all the main deliverables for component 1 have been completed and details on this are provided in Annex 9.

Budget Description	Approved budget for 2022	Disbursement from Jan 2022 to Sep 2022	Remaining Balance for 2022
Travel (South-South mission)	13,362	-	13,362
Contractual Services-Companies	31,000		
 Hosting and support fees for MARENA MIS 		27,471	
Consultancy for Licensing framework (completed)		7,700	
	38,606		
Training, Workshops and Confer:		6, 222	4,632
a. Workshops and communication materials		-	2,100
b. Reimbursement for online training			10,000
c. RE portal revamping (in collaboration with UNECA)		-	
d. Leadership training (completed)		4,681	
e. Photography/ videography for MARENA (photographer on		-	
board)			6,800
TOTAL COMPONENT 1	82,968	46,074	36,894
		56%	44%

Budget Description	Approved budget for 2022	Disbursement from January 2022 to Dec 2022	Remaining Balance for 2022
Travel (South-South mission)	13,362.00		13,362.00
Contractual Services-Companies	31,000.00		
Hosting and support fees for MARENA MIS		27,471.22	
Consultancy for Licensing framework		7,700.00	
Training, Workshops and Confer:	38,606.00		3,200.00
a. Workshops and communication materials		7,668.85	
b. Reimbursement for online training			2,000.00
c. RE portal revamping (in collaboration with UNECA)			10,000.00
d. Leadership training		4,681.21	
e. Photography/ videography for MARENA		1,389.29	5,000.00
Gain/ Loss		(472.43)	-
TOTAL COMPONENT 1	82,968.00	48,438.14	33,562.00

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Phase 1 Component 2

PROJECT OUTPUTS:		BASELINE TARGET	MID-TERM TARGET	END-OF-PROJECT TARGET	
Phase One	(2017-2019)	2017 (Jun 2017 - Jun 2018	2018 (Jun 2018 - Jun 2019)	2019 (Jun 2019 - Jun 2020)	Assumption
Project Output:	AGC Software purchased	No AGC software installed	AGC software and batteries purchased and installed		
2.1 Improving Grid Absorption Capacity to accept 185 MW intermittent RE	18MW BESS installed & operation al	No batteries		All equipment installed and grid able to accept a total of 185 MW installed RE capacity	Government maintains policy of promoting RE
		Grid able to accept 60 MW	Grid able to accept 100 MW		

Automatic Generation Control (see Box 1)

Scope	Achievement
AGC	 ✓ Finetuning at Fort Victoria followed by purchase of licenses ✓ GE engineer in Mauritius – 6 and 14 December 2021 ✓ Completed the field-based finetuning tasks ✓ Currently: remote finetuning ✓ Software license purchased

The CEB's AGC project aims at integrating ten generating units (St Louis G10-G13 generating units and Fort Victoria G1-G6 generating units) to the AGC function of the SCADA-EMS system at the System Control Centre.

As at IE2, the progress of works is as follows:

- i) Hardware interface, signal modelling, point-to-point test, unit and area tuning have been completed for the St Louis G10, St Louis G11, St Louis G12 and St Louis G13 generating units
- ii) Hardware interface, signal modelling, point-to-point test, unit and area tuning have been completed for the Fort Victoria G1, Fort Victoria G2, Fort Victoria G3, Fort Victoria G4, Fort Victoria G5 and Fort Victoria G6 generating units

The following further steps are required with respect to the AGC project:

- i) To run tests with a number of generating units under AGC control
- ii) To procure the licences required to use the AGC functionality of the SCADA-EMS system at the System Control Centre. The tentative date for the launching of the associated Request for Quotation (RFQ) exercise is January 2023 and hopefully, the licences should be purchased by March 2023 to render the AGC system fully functional thereafter.

The project completion of Phase I AGC is over 95% at IE2.



Active power-frequency control comprises four stages: i) inertial response, ii) primary frequency control, iii) secondary frequency control and iv) tertiary control.

Automatic Generation Control (AGC) pertains to **secondary frequency control** in a power system and is concerned with the use of the AGC function in the SCADA-EMS system at the System Control Centre to adjust the active power setpoints of a number of conventional generating units to restore the system frequency close to the nominal value of 50 Hz (within 1.5%) following an event leading to generation-load demand imbalance and the deployment of primary reserve.

While AGC will enable effective management of the secondary frequency control for grid stability, the primary frequency control following a sudden loss of, or reduction in, generation from renewable power sources will be mitigated with the installation of BESS, which has a reaction time of less than 20 ms.

The main steps followed for the integration of a conventional generating unit to the AGC function are as follows:

- i) Hardware interface between the Remote Terminal Unit (RTU) of the System Control Centre and Distributed Control System (DCS) of the conventional generating unit at the power plant
- ii) Modelling of the signals in the database of the SCADA-EMS system
- iii) Point-to-point test to check the proper flow of signal between the SCADA-EMS at the System Control Centre and the DCS of the generating unit
- iv) Unit tuning and Area tuning to determine the model parameters for the generating units and the area and require the conduct of real-time tests.

Grid-Scale Battery Energy Storage Systems

Scope	Achievement
18MW BESS	 ✓ 4 MW Wooton – 2 July 2021 ✓ 4 MW Anahita – 19 July 2021 ✓ 2 MW La Tour Koenig – 23 July 2021 ✓ 4 MW Jin Fei – 6 December 2021 ✓ 2 MW Amaury + 2 MW Henrietta – August 2018 ✓ Operating as per requirements

Contemporary and future power grids are characterised by a high share of renewable energy sources. This leads to a massive fluctuating power injection, which needs to be balanced by battery energy storage. In view of the increasing share of the Variable Renewable Energy (VRE) in the energy mix of Mauritius, the CEB has planned for the introduction of Battery Energy Storage System (BESS) on its network to arrest the fluctuation inherent to the VRE systems. The CEB has installed the first grid-scale Battery Energy Storage System (BESS), the first in its kind in Mauritius, to enable high capacity storage of renewable energy in the grid; BESS introduction began in 2018 with the installation of a 2 MW version at Amaury (see Table below). The last BESS to be installed was the 4 MW Jin Fei one in December 2021. The total capacity now stands at 18 MW on the national grid. This high-tech, latest technology and ultra-fast response BESS is the first of a series of upgrades to the electricity grid in order to achieve a smarter, more modern and cleaner electricity network in Mauritius. In addition, the CEB has also installed 1.5 MW of BESS in Rodrigues to strengthen its electrical network, in order to again further increase the share of renewable energy in its generation mix.

For added stability on the grid, there are plans to introduce more BESSs for ROM to achieve the renewable energy targets that have been set by 2025 and ensure reliable and safe supply of cleaner energy to the population. CEB has indicated that there are 20 MW under implementation and is targeted to be in operation in June 2023.





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Phase II Status:

25 MW PV Deployment

Figure x below shows the share-out of the 25 MW solar PV amongst the three identified categories: households, NGOs, and public buildings. Subject to timely procurements at both IP and CPB levels, a comprehensive plan for procuring and installing solar panels as part of Phase II of the project has been developed (see Table below). The timing and scope of each procurement have been carefully considered in order to ensure that the project stays on track and meets its target of 25 MW of solar panel installations - an example of a detailed adaptative procurement plan worked out by the PMU for the full PV deployment of 25 MW in Phase II.



Figure 3: 25 MW PV Deployment Share-out developed by PMU

PROJECT OUTPUTS:		BASELINE TARGET	MID-TERM TARGET	END-OF-PROJECT TARGET	
Phase TW	O (2020-24)	2020	2022	2024	
Project Output:		5 MW PV under Phases 1, 2 and 3 of the SSDG	Additional 2 MW on grid from NGOs and 5 MW from households	4 MW capacity on grid from NGOs and 10 MW from households.	
2.3 PV deployment	Actual MW installed by category (gender- disaggregated data)				Price of fossil fuels does not fall markedly
		25 MW utility-scale PV on the grid	5 MW from Public Buildings	11 MW capacity installed on public buildings	in the medium-term
			65 MW PV utility-scale	130 MW utility-scale renewable energy	

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Category	Implementation schedule	Duration	Status
Low Income HH			
3MW HSP Phase II	Aug 2022 - Jan 2024	18 months	Being installed
2MW HSP Phase III	Jan 2024 - Dec 2024	12 months	
Middle-income HH			
3MW SSDG Net-Billing	Jan 2023 - Aug 2024	20 months	To be awarded in Jan 2023
2MW SSDG Net-Billing	Sep 2024 - Nov 2025	15 months	
NGOs 2MW Scheme for Religious Bodies etc. I 2MW Scheme for Religious Bodies etc. II	Jan 2023 - Aug 2024 Sep 2024 - <mark>Nov 2025</mark>	20 months 15 months	To be awarded in Jan 2023
Public Buildings 6MW Public Educational Institutions 5MW Other Public Buildings	Jul 2023 - Dec 2024 Jan 2024 - Apr 2025	18 months 16 months	To be awarded in July 2023. Technical survey before.
Total 25MW			33,487,579

Two tenders for a total of 9 MW have already been launched by CEB - nearly 36% of the target. If 25% is aimed for each year, then the full 25 MW should be launched and procured within 4 years.

- First 3 MW (2,000 x 1.5kWp for low-income households under HSP Phase II) currently being installed. *Nearly 0.5 MW have already been installed;*
- Second tender for 6 MW (3,000 x 2kWp for middle-income HHs and NGOs) and is expected for award in January 2023.

The two highlighted dates in yellow indicate already a necessary extension for Phase II.

There are major issues to get interest from low-income households. It is a tedious, slow process. The project design (prodoc) should have anticipated that. Until low-incomers become more interested in the Home Solar Project, deployment for this category will be extremely slow (as it has been for HSP I).

A list of Public Educational Institutions has already been worked out for the deployment of some 6 MW (out of the 11 MW for Public Buildings). A technical survey is scheduled to be carried out early next year, through DBM (whilst maintaining CEB as RP), for installation to begin early 2024. The enlistment of the consultant for the technical survey for Public Educational Institutions will be effected by UNDP through its Procurement Process.

It is important to carefully manage the procurement process in order to ensure that the necessary materials and resources are obtained in a timely manner. It may be helpful to have contingency plans in place in case further delays or disruptions arise, in order to minimise their impact on the project. It is also important to regularly review and assess the progress of the project and make any necessary adjustments to the plan as needed.

PROJECT OUTPUTS:		BASELINE TARGET	MID-TERM TARGET	END-OF-PROJECT TARGET	
Phase TWO (2020-24)		2020	2022	2022 2024	
Project Output:	Advanced Distribution Management system	No ADMS	ADMS partly installed	ADMS completely installed	Government acknowledges the
2.2 Smart grid					power stability benefits
	Smart Grid Strategy	No long-term smart grid strategy	Long-term smart grid strategy under preparation	Long-term smart grid strategy developed	of smart grids and is keen to invest further

Smart Grid Strategy

CEB is strongly committed to transform its traditional network into a smart grid network to further increase the reliability of electricity supply, efficiency of operation and support the integration of distributed generation. A Smart Grid Roadmap was developed in 2019 under the GEF project on "*Removal of Barriers to Solar PV Power Generation in Mauritius, Rodrigues and the Outer Islands*". A Smart Grid Committee has been set up at the level of the CEB to drive and monitor the deployment of smart grid technologies and studies as follows:

- Advanced Distribution Management System (ADMS) (see Box 3): The ADMS has The ADMS application complete with servers has already been installed and commissioned at the level of the System Control (see Box 2). This will help system operators to have a better visibility of the distribution network for remote monitoring and control. At IE2, the CEB is modelling the 22kV distribution lines/cables and deploying remote controlled load break switches to be interfaced with the ADMS for remote control and monitoring.
- Automatic Generation Control (AGC) (see Box 1): AGC has already been installed and is at IE2 at the level of fine tuning. This will help to restore the frequency of the network to around 50 Hz following a network disturbance and primary frequency response. Once the license and test are completed the system will be made live in operation.
- **Mapping the Network:** A Geographical Information System is a layer in the ADMS that provides the geographical layout of the distribution networks including their GPS Coordinate. The CEB has the **ARCGIS software** installed and is, at IE2, mapping the network. The objective is to map the whole of the distribution network and a tender in this respect will be launched shortly.
- Smart meters and a smarter grid form the very foundation of the digital utility, supplying an abundance of data to optimize data-based analyses, planning, and diagnostics. Smart meters are at the very core of a smart grid allowing two-way communication between consumers and the energy network, enabling real-time and automatic responses to changing electric demand. At IE2, there are around 70,000 smart meters on the network and the target is to deploy around 60,000 to 100,000 smart meters per year.
- An Advanced metering infrastructure (AMI) (see Box 4). The technical study has already been completed and the consultant working on the project is presently drafting the tender document. The AMI requires a huge investment and in this respect, the same will be implemented once financial resources are available.

BOX 3: Advanced Distribution Management System

The Advanced Distribution Management System (ADMS) is a computer-based system for the remote control and monitoring of the distribution network. It helps utilities manage their power distribution networks in real-time, allowing them to improve reliability, efficiency, and security. It thus comprises both software and hardware. The ADMS is a comprehensive system for managing the distribution grid, which includes functions such as fault location, isolation, and system restoration. It is basically a network of smart switches to be deployed all over the grid for enhanced control. The deployment of communicable fault passage indicators and sectionalizers on medium-voltage (MV) feeders allows for the monitoring and control of these devices from the CEB's Supervisory Control and Data Acquisition (SCADA) system. In addition, communicable shunt capacitors and voltage regulators can also be monitored and controlled from the SCADA system, which helps to reinforce the structural efficiency of the grid and minimise transmission and distribution losses. The inclusion of these

systems allows for the integration of intermittent renewable energy sources into the grid, while also improving grid reliability and stability. Self-healing options can also be envisaged down the road.

At IE2, CEB is presently deploying load break switches and mapping the 22 kV feeder network. CEB has procured 90 remote controlled motorised load break switches ADMS units worth USD 1.4M (out of USD 1.6M); these are scheduled to be delivered in March 2023 and installed over a period of 6 months or so. The remaining budget will be used for a technical consultancy to provide GIS mapping and other services. Installing an ADMS can be a complex and time-consuming process, as it involves modelling the existing distribution networks on the ADMS and deployment of the LBS (currently in progress at IE2) and training personnel on its use. It is important to carefully plan and coordinate the installation process to ensure that it is completed smoothly and efficiently. It is also important to work with experienced professionals and vendors to ensure that the ADMS is properly configured for the distribution network.

There is no exact identification of the scope of the ADMS part of this project in neither the Prodoc nor the Funding Proposal. The only data available was a budget of around USD 1.6M. The scope of the ADMS can be extremely large and therefore costly. For instance, CEB feels they will require at least 300-400 load Break Switches (LBS) and the associated FRTUs to cover the whole island. However, given that around USD 1.4M already on hardware (out of USD 1.6M budget), the balance has been reserved for a consultancy exercise in 2023. The indicator is therefore compliant as one of the smart grid strategies for a more efficient and reliable grid. It must be stressed that, at the last PB in October 2022, CEB reported that it was not required anymore given other options (e.g. RE Roadmap 2030).

BOX 4: Advanced Metering Infrastructure

The AMI is an integrated system of smart meters, communications networks, and data management systems that enables two-way communication between utilities and customers. It does not only supply meter reading capabilities but also provides advanced capabilities such as remote disconnection of supply, power outage and restoration reporting, and distribution equipment monitoring. In addition, an AMI allows exchange of information with other enterprise applications software and planning tools among others. It thus helps a utility to efficiently manage its power system. This allows utilities to more accurately measure and track electricity usage, and can also enable customers to monitor their own consumption and make more informed decisions about their energy use. CEB intends to have a centralised Outage Management function will be deployed that will allow last-gasp messages from smart meters (provided as part of CEB's non-GCF-funded AMI programme) to infer the location of faults on CEB's LV network, allowing crews to be dispatched to resolve LV fault conditions and restore power as quickly as possible (including validation of restoration by pinging any faultassociated smart meters). A technical consultant was hired by the CEB to draft tender documents for the procurement of AMI infrastructure and equipment, with a budget of approximately MUR 3 billion over a period of 8 years. The process of procuring and installing an AMI system can be complex and time-consuming, as it involves a large number of technical and logistical considerations. It is important to work with experienced professionals and vendors to ensure that the AMI system is properly designed, installed, and configured to meet the needs of the community. The AMI requires a huge investment. The technical study for its implementation has been completed and the tender document is under preparation by the consultant.

Capacity Building

To achieve the RE transition, GCF funding also involves capacity building (training, education, and professional development programs, as well as the provision of resources, tools, and support) to help organisations and individuals build their capacity.

The table below lists out a series of capacity building undertaken at different organisations.

Capacity Building undertaken for M/EPU, CEB, MARENA and URA under the GCF project						
 MARENA: Various Modules (Renewable Energy Management & Finance; Renewable Energy Solutions; Energy Storage; Solar Photovoltaic; Electric Vehicles; Solar Water Heating; Electrics for Renewables; Wave & Hydro Power; Biomass; Wind Power; Combined Heat & Power; Project Management Financial risk management - Harmonised Approach to Cash Transfer (HACT) MIS 	 URA: ERP; MIS Financial risk management - HACT CEB More than 75 CEB technical staff trained on the BESS + Smart grid communication protocol (IEC61850) ADMS and AMI RE Management and Finance Training on RE Power Purchase Agreement: MARENA/URA/CEB/M/EPU 					
M/EPU • Biomass Certificates • Electrics for RE	 Training on Project Leadership Certification: MARENA/URA/M/EPU Training on RETScreen: MARENA/URA/CEB/M/EPU 					

These have certainly strengthened and empowered the organisations not only in meeting the technical challenges (for instance, coping with new technologies: BESS, AGC, ADMS, etc) but also in understanding of the RE and its implications (e.g. planning and strategy developments, etc). However, with the high turnover experienced (e.g. at MARENA), there will be the need for sustained training.

Providing training and education opportunities to women and women entrepreneurs can be an important way to support and empower these individuals, and can also help to increase the diversity and inclusivity of the renewable energy sector. It is important to ensure that training programs are tailored to the needs and interests of the participants, and that they provide the necessary knowledge and skills to succeed in their chosen fields. Women and women entrepreneurs have received advanced training in Solar PV, Communication and Entrepreneurship Skills (see Table 5).

Table 5: Solar PV	trainings	provided to	women
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Courses	Trainers/Sponsor s	Number of women trained	
MARENA RE Scholarship Scheme	MARENA-BHC-	First batch: 8 awardees	
Scholarship scheme initiated in 2021	UoM-MITD	Second batch: 17 awardees	

Photovoltaic Energy Systems 22 January 2022 - 16 April 2022 - 36 hrs		Third batch: 13 completion Fourth batch: will start in a few weeks <i>Certificate Award Ceremony yet to be</i> <i>organized</i>
Skills Development for Solar PV Value Chain Batch 1 - 14 - 28 March 2022 (53 hrs)	UNDP-AHC-UoM	15
Skills Development for Solar PV Value Chain Batch 2 - 20 June - 4 July 2022 (53 hrs)	(UNDP-AHC-UoM	31 A Certificate Award Ceremony was held on the 8th December 2022
Basic Photovoltaic & Entrepreneurship course Training run between 2020 - 2021	MITD	193 (2020: 89 / 2021: 104) A Certificate Award Ceremony was held on the 8th December 2022

According to a trainer and member of the PB, there is further training of service providers that needs to be developed.

For the Additional Training Aspects:

1. Smart Grid Concepts and Security

2. Smart Grid Power Electronics

3. Power system performance monitoring, appraisal and optimization.

For Barriers towards 60% RE in the mix:

1. (Lack of workforce) for SSDG and MSDG projects.

2. Need for compulsory and continuous training of personnel throughout the value chain of RE projects covering the technical aspects, installation, safety and system monitoring.

Providing ongoing training and professional development opportunities to the workforce can help to ensure that they have the necessary skills and knowledge to succeed in their roles and contribute to the overall success of the project. For instance, additional training in the future will be necessary to help them develop advanced skills in the field of smart grid technology. Smart grids are advanced electricity networks that use digital technologies to improve the efficiency, reliability, and security of the power grid. Some of the specific areas of training include Smart Grid Concepts and Security, Smart Grid Power Electronics and Power system performance monitoring, appraisal and optimization. It is thus important to carefully assess the training needs of the workforce and identify areas where additional upskilling may be beneficial. Working with experienced trainers and educators can help to ensure that employees receive high-quality training that is relevant to their needs and goals.

There may be a need for further training as barriers to achieving the 60% level of renewable energy (RE):

- Lack of workforce for SSDG and MSDG projects: It can be challenging to find qualified and experienced personnel to work on Small and Medium-Scale Distributed Generation (SSDG and MSDG) projects, particularly in specialised fields such as renewable energy. This can be due to a variety of factors, including a lack of trained professionals in the local job market, competition for skilled workers from other industries, and the high costs of recruiting and training new staff. To address this challenge, it may be necessary to invest in training programs to develop the local workforce, or to work with partners to bring in experienced personnel from other areas.
- Need for compulsory and continuous training of personnel throughout the value chain of *RE projects:* Ensuring that personnel throughout the value chain of RE projects, including technicians, installers, and system monitors, are properly trained and qualified is essential for the success of these projects. This can help to ensure that RE systems are installed safely and correctly, and that they are properly maintained and operated over time. Providing ongoing training and professional development opportunities can help to ensure that personnel are able to adapt to new technologies and stay up-to-date with best practices in the field.

Awareness on RE Schemes

Conducting awareness campaigns can be an effective way to educate and engage the community about RE projects and the benefits they can provide. It is important to carefully plan and coordinate these campaigns to ensure that they reach a wide audience and effectively communicate key information. It may be helpful to work with local partners and stakeholders to develop materials and strategies that are tailored to the needs and interests of the community. A full-fledged mission was conducted in Rodrigues on 4-12 November 2022 to launch an awareness campaign on the GCF-funded RE schemes. The campaign was successful, with more than 150 people expressing interest in the RE schemes despite a limited number of kits being available (about 100 kits reserved for Rodrigues due to the limited GAC). Flyers and branded communication materials were procured for the awareness activities. There are plans to repeat this campaign in Mauritius.

An overview of the progress towards results at IE2 is presented in the Table 6 below:

Table 6: Analysis of progress towards results at IE2

Project Strategy	Indicator ⁵	Baseline Level ⁶	Level in 1 st APR (self- reported)	Midterm Target ⁷	End-of- project Target	Midterm Level & Assessment ⁸	Achieve- ment Rating ⁹	Analysis: status of indicator; justification for rating (triangulated with evidence and data); how realistic it is for target to be achieved
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⁵ Populate with data from the Logframe and scorecards

⁶ Populate with data from the Project Document

⁷ If available

 $^{^{\}rm 8}$ Colour code this column only

⁹ Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

Fund Level	Indicator:	0	23,616	190,951	Highly	3 MW is
Impact:	Tonnes of			(direct)	Satisfactory	under
M1.0	carbon		(direct)	. ,	-	implementatio
Reduced	dioxide			472.311		n and tender
emissions	equivalent			(indirect)		for 3000 kits
through	(tCO2eq)			(11011000)		are under
increased	reduced or					evaluation.
low-	avoided as a					Calculations
emission	result of Fund					indicate that
energy	funded					260 kton
access and	projects /					CO2e has
power	programmes					been avoided
generation						thanks to 18
						MW BESS
						helping to add
						55.5 MW of
						IRE on the
						grid since
						project start
						and till date.
						That's nearly
						halfway to the
						472,311
						indirect target
						at the project.

systems low-emission planning and development and their effective implementati on	operationa l to promote deployme nt of renewable energy in the country National Grid Code and tariff methodol ogy not reflecting the planned RE deployme nt expansion	National Grid Code and tariff methodol ogy reviewed and recommen dations on improvem ents provided to the relevant authorities	Impleme ntation measures for uptake of renewabl e energy such as regulatio ns for PV technicia ns in line with its workpla n National Grid Code and tariff		
Output.Indicator:1.1InstitutioRenewablenalEnergystrengtheniAgency Actng of thein placeMauritiusInstitutionRenewableInstitutionEnergystaffed byAgencymid-term	Legislatio n voted No staff contracted	Suppleme ntary legislation – regulation s and standards drafted 10 staff recruited	RE market expansio n adopted by the relevant authoriti es MAREN A functioni ng as a fully- fledged agency 15 staff recruited	Satisfactory	The Renewable Energy Agency Act was enacted in 2016 Regarding staffing, one key staff (Research Development Officiare)

Outcome 2:	Indicator:	20%	28%	35%	HighlySatisf	Progress is
M6.0	Proportion of				actory	being made
Increased	low-emission				-	towards the
number of	power supply					installation of
small,	in a					the 25MW
medium	jurisdiction or					renewable
and large	market					energy. This
low-	Indicator:	83,000	100,000	129,500		will increase
emission	Number of	household	household	househol		the share of
power	households,	s	s	ds		RE in the
suppliers	and					energy mix as
	individuals	Males:	Males:	Males:		well as the
	(males and	124 828	174 760	218 450		number of
	females) with	121,020	17 1,700	210,100		households
	improved	Females	Females	Famalas		having access
	access to low-	127 350	178 292	222 865		to low energy
	emission	127,330	170,272	222,003		sources.
	energy					Contracts
	sources					have been
						signed, new
						schemes have
						been
						launched,
						Tenders for
						140 MW of
						Renewable
						Energy
						Hybrid
						Facility have
						been
0	Tu di anta m	N- ACC	ACC	A 11	II: -1-1	The ACC
Output 2.1	Indicator:	No AGC	AGC	All .	Highly	The AGC
Improving	Software	software	software	equipme	Satisfactory	software has
Gria A haamatian	purchased	installed	and	nt		been
Absorption Consists to			batteries	installed		purchased and
Capacity to	Battery	No	purchased	and grid		it is running
Accept 185	energy	batteries	and	able to		(test).
intormittont	storage		installed	accept a		Following the
DF	system	Grid able		total of		test, the
KĽ	procured	to accept	Grid able	185 MW		licence of the
		60 MW	to accept	installed		software will
			100 MW	RE		be purchased.
				capacity		The battery
				enpaolog		storage
						system has
						been
						purchased on 1
						purchased and
						installed
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Output	Indicator:	No	ADMS	ADMS	Highly	USD 1.4M
2.2 Smart	Advanced	ADMS	partly	complete	Satisfactory	worth of
grid	Distribution		installed	ly		ADMS units
	Management			installed		have been
	system		Long-			procured and
			term	Long-		due for
	Smart Grid		smart grid	term		delivery in
	Strategy		strategy	smart		March 2023
			under	grid		followed by a
			preparatio	strategy		six-months
			n	develope		installation
				d		period. The
						remaining
						USD 200K
						will be used
						for a technical
						consultancy
						for GIS
						mapping in
						2023.

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Output	Indicator:	5 MW PV	Additiona	4 MW	Satisfactory	Two tenders
2.3 PV	Actual MW	under	12 MW	capacity		for a total of
deployment	installed by	Phases 1,	on grid	on grid		9MW already
	category	2 and 3 of	from	from		launched,
	(gender-	the SSDG	NGOs	NGOs		constituting
	disaggregated		and 5	and 10		over 36% of
	data)	25 MW	MW from	MW		the 25 MW
		utility-	household	from		target.
		scale PV	s	househol		\The
		on the		ds.		installation of
		grid	5 MW			the first 3MW
		0	from			for low-
			Public	11 MW		income
			Buildings	capacity		households is
			U	installed		ongoing, with
				on		nearly 0.5MW
			65 MW	public		already
			PV	building		installed and
			utility-	s		commissioned
			scale			. The second
				130 MW		tender on 6
				utility-		MW (3,000 x
				scale		2kWp for
				renewabl		middle-
				e energy		income
				0.5		households
						and NGOs)
						will be
						awarded in
						January 2023.
						An adaptive
						procurement
						plan has been
						developed for
						the 25 MW
						and a list of
						public
						educational
						institutions
						for the
						deployment of
						6 MW has
						been secured
						 a technical
						survey is
						planned for
						early 2023,
						procurement
						planned to
						happen across
						2023 while
						installation is
						envisaged to
						commence in
						early 2024.

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Output 3.1	Indicator:	Existing	300 kW	300 kW	N/A	Component 3
PV mini-	Capacity of	systems	PV	PV		is meant to
grids on the	PV systems	are not	systems	systems		start as from
outer island	installed	functional	fully	remain		second year of
of Agalega			operation	fully		Phase II (ref.
	Number of	No one	al	operatio		Prodoc). So in
	OIDC staff	trained		nal		essence we
	trained		3 females			are still within
			and 5			the timeline
			males			for C3.
			trained			Clearance
						may be sought
						in the mean
						time from the
						PMO prior to
						the
						commenceme
						nt of activities
						in the Agalega
						Island

Indicator Assessment Key

4.4.2 Remaining barriers to achieving the project objective

The key risks that remain that may influence the achievement of the project's objective in Phase 2 and the mitigation strategies proposed are included in Table 7.

Table 7: Remaining barriers that may influence project's objective attainment

Barrier	Description and Mitigation Strategy
Procurement Issues	It is important for the PMU to implement forward planning and timely updates to the Procurement Plan in order to anticipate delays and ensure that the procurement process runs smoothly. This may involve working closely with the executing entity and the Project sub board for Component 2, as well as reviewing and confirming the scope, specifications, and terms of reference for the procurement of PV panels. The PMU should also consider the time frame for the procurement process through the Central Procurement Board (CPB) and the possibility of appeals through the Independent Review Panel (IRP). If necessary, the PMU may need to address any shortcomings that impact on f procurement such as staffing or inviting shortlisted companies. It may be more efficient to use UNDP's procurement systems for some of the procurement. Thus, careful planning and timely updates to the Procurement Plan can help to ensure that the project is able to secure the necessary resources in a timely and efficient manner.
Capacity Issues	It may be challenging for the project to achieve the target of rolling out 25 MW of rooftop solar PV systems over a period of 5 years in Phase II of the GCF project, as the past decade has seen an average of only 1-2 MW of small-scale distributed generation (SSDG) rooftop solar PV systems deployed per year. tThe project team may need to consider measures such as capacity building and training programs to help build the necessary human and technical capacity to support the increased rate of deployment.

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COVID/WAR impacts	COVID-19 pandemic has had a significant impact on many projects around the world. The lockdowns and other restrictions put in place to contain the virus can make it difficult to carry out certain activities, and supply chain disruptions can also affect the procurement of necessary equipment and materials. This is also true for wars. It can be helpful to try to anticipate these types of challenges and have contingency plans in place to minimise their impact on the project. This might include finding alternative sources for equipment or materials, adjusting the project plan to allow for delays, and communicating with stakeholders about any changes to the project timeline. It's also important to stay up to date on the latest guidance and regulations related to COVID-19, as these can change rapidly and may impact the project in different ways. Using national contractors can help reduce the risk of travel restrictions and other disruptions, as well as supporting local businesses. Digital solutions like webinars can also be a useful way to keep stakeholders informed and engaged.
Staffing problems	Although losing the project coordinator and having candidates decline the project assistant role may initially cause setbacks, there are steps that can be taken to minimize the impact on the project. By anticipating potential staffing issues and having contingency plans in place, one can efficiently bring in alternative resources or adjust the project plan as needed. Effective communication with the team and stakeholders is also crucial in addressing any staffing challenges. With careful planning and collaboration, one can overcome these challenges and successfully complete the project.
CYCLONE impacts	Cyclonic winds can cause damage to PV panels, so it's important to take steps to mitigate this risk. It is good to note that the tender specifications for the PV panels specify that they must be able to withstand cyclonic winds and meet any relevant standards or regulations on Accreditation of Operators - in terms of certification of RE installations. It's also good to note that CEB has appropriate insurance coverage in place to protect against damage caused by cyclonic winds. It's important to regularly review and assess the risks associated with the project, including the potential impact of cyclonic winds and other environmental factors, and take steps to mitigate those risks as appropriate. This can help ensure the success and sustainability of the project.
Batteries and PV Panels recycling/dispo sal	Decommissioning can pose a risk of containment breach, which could result in spillage of electrolytes, contamination of the environment, and injury to personnel. It's important to take steps to mitigate these risks and ensure compliance with environmental and social management plans and relevant waste management legislation . The regulations on standards and RETs must be implemented as soon as possible; this can also avoid dumping. A consultancy study can be undertaken to identify the best strategies for safe recycling and disposal of used batteries and solar PV panels; unless the manufacturer agrees to take them back. The study could also consider factors such as potential hazards associated with their decommissioning, and the most appropriate methods for disposal. In the absence of the possibility for the manufacturer to take back the BESSs, a decommissioning plan must be put in place for the BESS that outlines the steps to be taken to safely decommission the system and dispose of any hazardous materials. The plan should be based on best practices and relevant regulations, and should include measures to prevent containment breaches and protect the environment and workers. CEB has indicated that such a study on disposal of PV panels had been carried out under the GEF project on Removal of Barriers to PV Power Removal of Barriers to Solar PV Power Generation in Mauritius, Rodrigues and the Outer Islands to Review the small scale distributed generation scheme and assessing the market status in Mauritius.
Recruitment of staff	High turnover and a lack of specialised staff can certainly affect the timely delivery of a project. High turnover can lead to a lack of continuity and expertise, as well as additional time and resources being spent on training and onboarding new staff. Similarly, a lack of

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	 specialised staff can make it more difficult to complete certain tasks or meet specialised project requirements. To mitigate these risks, it can be helpful to implement strategies such as: Recruiting and retaining qualified and experienced staff: <i>This might involve offering competitive compensation and benefits, providing opportunities for professional development, and creating a positive work environment.</i> Developing a talent management plan: <i>This should outline the steps needed to identify and develop the skills of the staff, including training and professional development opportunities.</i> Building a strong team: A team that works well together and has good communication and problem-solving skills can be more effective at meeting project deadlines and delivering high-quality work. Managing workload and resources: Ensuring that the team has adequate resources and support, and that workload is properly balanced, can help ensure that projects are completed on time.
Financial sustainability	 Phase I: For financial sustainability, MARENA needs to mobilise more green funds from International Financing Institutions (IFIs). There may be rising installation costs and increase of project budgets due to shortage of technical staff and more training will need to be delivered. Ensuring financial sustainability is an important part of any project, as it helps ensure that the project can continue to operate and deliver benefits over the long term. To mobilise more green funds from IFIs, one can consider the following strategies: Research potential funders: <i>Identify IFIs that provide funding for projects related to project's goals and objectives</i>. Develop a funding proposal: Outline the details of the project and the benefits it will provide, as well as the funding being requested and how it will be used. Make a strong case for funding: Highlight the impact and sustainability of the project, and demonstrate how it aligns with the funders' priorities and mission. Follow up and negotiate: Once submitted, there is the need to follow up with the funder to ensure they have received it and to answer any questions they may have. Be prepared to negotiate the terms of the funding if necessary. Phase II: It's also important to anticipate and plan for rising installation costs and budget increases due to shortages of technical staff and the need for additional training. This might involve finding alternative sources of funding or adjusting the project plan to account for the additional costs.

4.4.3 Assessment of impact of COVID-19 on project implementation

The COVID-19 pandemic has had a significant impact on the project, including international travel restrictions that have made it difficult for consultants to travel to Mauritius and supply chain disruptions that have delayed the delivery of certain components. These challenges have resulted in delays to the commissioning of the battery energy storage system (BESS) and the completion of the AGC system, as well as delays in staff recruitment and the ability to conduct South-South Cooperation. The pandemic has also required the project team to work remotely and required local stakeholders to adjust to a new working configuration. A second lockdown in March 2021 further impacted the fine-tuning of the AGC system, staff recruitment at MARENA, and the ability to conduct awareness sessions.

The pandemic equally disrupted global supply chains, culminating in an increase in the prices of the PV components. At the time of procurement, the unit price per PV component was higher than the

budgeted amount. Consequently, to procure the same quantity of PV components that was initially planned, a reallocation of budget was done in order to increase the budgeted amount for the PV components.

4.5 Project implementation and Adaptive management

Implementation and adaptive management – seeks to identify challenges and propose additional measures to support more efficient and effective implementation. The following aspects of project implementation and adaptive management will be assessed: management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications.

4.5.1 Management Arrangements

As noted by the IE Team, the project has been effective in achieving most of its targets for Phase I (see activity lines in Annex 9). The project has benefited from significant co-financing from the government, including CEB, as well as additional unplanned grants from the SADC Secretariat (to the tune USD 200,000 approx) and the Clinton Foundation Initiative (to the tune USD 50,000 approx). However, the co-financing from AFD in the form of a loan to CEB has not yet materialised due to procurement issues during the evaluation of bids for the tender for Gas Insulated Switchgear (GIS) at the level of the Central Procurement Board (CPB). Overall, the evaluation team believes that the project has been effective in reaching its targets and addressing any challenges through adaptive management strategies of the UNDP CO and the PMU. The co-financing ratio at the end Phase I is approximately 2: 1. Some of the adaptive management measures employed by the project includes the following:

As the Project Sub-Board and Board committee meetings were too far apart and did not support close and sustained project monitoring, an informal progress committee for both components was established to meet every two months to ensure an effective and efficient project management;

The project coordinator and project manager from component 2 provided backstopping to ensure quality of work following the resignation of the project manager for component 1 due to under-performance;

Due to insufficient staff capacity of MARENA, the GCF project team worked closely with the institution to ensure timely scheduling of activities;

With the advent on the Covid-19 pandemic and associated impacts on the timely completion of the 14 MW BESS component, the project employed the use of the zoom platform for virtual project monitoring and resorted to accelerating implementation through working in four sites parallelly as opposed to doing so sequentially;

Revisiting and revising drafted regulations on standards following changes in high-level government policies regarding business facilitation.

The AFD Sunref programme has experienced a depletion in funding and the PMU has successfully secured new co-financing from the DBM and CEB to continue the project. The PMU has proactively managed risks and communicated effectively with stakeholders, including the government and donor, to keep the project on track despite challenges such as the resignation of the project coordinator. They have also prepared impact analysis and kept the donor informed of progress beyond the regular annual reports.

Having specific Project Managers for each component enables them to follow activities closely. The workspace of the Project Managers within MARENA and CEB facilitates an informal and efficient working arrangement, with short lines to key stakeholders and direct and quick communication.

The Project Management Unit (PMU) for the project has been able to effectively adapt to changing circumstances and provide necessary support to key stakeholders, despite facing some challenges created by the pandemic/war. Project implementation has taken advantage of opportunities for partnerships and actions that support the overall project objective. It is positive that the PMU team is dedicated and technically sound, and has been able to make progress despite a slow start.

The PMU team provided necessary backstopping assistance to MARENA with staff turnover and delays in recruitments. The URA being also a young institution with new and inexperienced staff, extensive guidance was required for the review of key deliverables.

The development of a comprehensive and carefully worked out plan for procuring and installing solar panels as part of Phase II of the project in order to ensure that the project stays on track and meets its target of 25 MW of solar panel installations is an interesting example of a detailed adaptative procurement plan worked out by the PMU in Phase II. Of course, it will be subject to timely procurements at both IP and CPB levels.

It is also important to note that there are still other areas for improvement, specifically in knowledge management and communication, which can be addressed to further improve the effectiveness of the PMU and the overall project. It is common for projects to face challenges and it is important for the PMU to continuously assess and address areas for improvement in order to ensure the success of the project.

Phased approach: the phased approach to project implementation was important as it enabled a chronological flow in the delivery of the project. Phase 1 targeted setting up the necessary enabling environment for the promotion of renewable energy in the country which was to achieved under phase. Hence, components and activities under phase 1 were meant to be implemented early on in the project as these had to ensure that the prerequisites for phase 2 are met.

4.5.2 Work planning

The project has a solid foundation in terms of work planning as per the provisions in the project design document including the use of a logical framework and annual work plans (AWPs). It actively engages stakeholders, even providing guidance to the project team. However, it's also important to ensure that the work plans provide sufficient detail for daily project management and implementation. Including activity descriptions that provide information on the scale of the activity and the number of expected participants, can be helpful for effective project management. One way to address this issue might be to use a project management tool that is embedded with a project accounting tool. This can allow for more detailed daily planning and provide a link between the general overview of log frame activities and the specific details of daily tasks and targets.

4.5.3 Financing and Co-financing

Financial management (planning, reporting, fund flow, etc) is assessed as satisfactory with no issues flagged in the independent audit and an enabling environment for work by other donors. The last financial audit was conducted for FY2021 and an 'unqualified' opinion was expressed. In addition, there were no audit adjustments. Quarterly and annual financial reports document the financial delivery of the project.



Figure 4: Project budget utilization

Year	Budgeted (M\$)	Expenditure (M\$)	% of Expenditure
2017	0.264	0.263	99.73
2018	2.61	2.25	86.36
2019	4.70	1.55	33.00
2020	7.20	6.94	96.31
2021	1.72	1.63	94.5
2022	3.09	1.95	63.1

Table 8: Financial delivery for 2017-2021 and 2022 based on ATLAS budget data

Except for 2019, the project's planned and actual expenditure for all years is reasonable. The reason for the minimal expenditure in 2019 is due to the delayed award of the contract for the 14 MW BESS following a lengthy procurement process. The total delivery in Phase I @ IE1 was 95% (USD 11, 503,165 out of USD 12,074,158). The average project burn rate is 76.32%, which is good.

The total delivery in Phase I @ IE2 is 98.3% (USD 11,866,778 out of USD 12,074,158). The average project burn rate is 76.32%, which is good.

Table 9 gives an overview of co-financing sources, types, confirmed amounts at endorsement and actual amounts contributed at IE.

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Institution	Committed co-financing (USD M)	Co-financing materialized (as of December 31, 2022 (USD M)
UNDP (across all phases and components)	1.38	1.51
Government -MEPU (C1)	1.0	1.0
Government – CEB (C2)	122	29.57
Government – AFD (loans) (C2)	37.9	0.14
Government – OIDC (C3)	0.9	0
Total	163.18	32.22

Table 9: Co-Financing Table ¹	e 9: Co-Financing Table	10
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4.5.4 Coherence in climate finance delivery with other multilateral entities

The project is focused on promoting the use of renewable energy and reducing carbon emissions in Mauritius. It aims to do this through the implementation of three interlinked components, targeting specific barriers to the uptake of renewable energy in the country. The project is being implemented by the UNDP with funding from the Green Climate Fund (GCF). It is also being supported by co-financing from the Government of Mauritius and the Agence Française de Développement (AFD). The project aims to increase the use of local renewable energy sources, reduce the reliance on imported fossil fuels, and support the development of a low-carbon economy in Mauritius. It is also working to improve the resilience of the country's electricity production, particularly in the face of extreme weather events. The project engages with stakeholders at various levels, including local communities, NGOs, and the private sector, and is working to create an enabling environment for other donors to provide climate finance in Mauritius.

The project is helping to implement the provisions of the Climate Change Act (2020) which came into force in April 2021. Several activities are being implemented by CEB and URA under the component 2 of the 'Nationally Appropriate Mitigation Actions (NAMA) project for low carbon island development strategy', facilitated by UNDP through the GCF project. Whilst the SUNREF Program, an initiative developed by AFD to support financial institutions and their clients to boost financing for projects for sustainable natural resources management, with a focus on clean energy, the programme funding rapidly depleted at the coming in of Phase 2. Fortunately, the DBM offers similar financing options in the green sector and has accepted to form part of this laudable project. There are several donor interventions (AFD, World Bank, European Union, Commonwealth Secretariat, etc) and the GOM has adopted a very programmatic approach to the role of the UNDP-GCF project towards supporting specifically RE development. The project has successfully put in place an enabling environment for work by other donors and the potential for blending climate funds remains high and the project has the potential to provide a catalyst for climate finance delivery by other development agencies.

4.5.5 Project-level monitoring and evaluation systems

This project is monitored and evaluated annually and periodically during implementation to ensure that it effectively achieves its intended results. Both a monitoring and evaluation plan has been included in the funding proposal, and the project complies with UNDP and GCF requirements for monitoring and evaluation. The UNDP Country Office works with relevant stakeholders to ensure that these requirements are met in a timely and high-quality manner. It is important for the success and

¹⁰ CEB is contributing USD 29,565,846 as at 31 Dec 2022 - to be confirmed by M/FEPD

GCF uses various monitoring and evaluation tools and processes, including an inception report, annual performance reports, interim and final evaluations, and audits. The project also reports on environmental and social risks, the implementation of the gender action plan, stakeholder engagement, and project board meetings. If there is concern about misuse of funds, the GCF may also conduct a periodic review, ad hoc check, or evaluation. The annual performance reports are completed and submitted to the GCF on an annual basis; two mid-term reviews are included to assess progress and make recommendations for improvement. A terminal evaluation will be conducted prior to the end of Phase 2 of the project. The terms of reference and review processes for these evaluations will follow standard templates and guidance from the UNDP, and the reports will be publicly available in English. The completion of the first interim evaluation with a satisfactory rating or higher is a precondition for transitioning to Phase 2 of the project. It is important for the project to regularly track progress and assess the effectiveness of interventions in order to ensure its success and sustainability; this has been confirmed by PMU to be the case.

The Project Coordinator is responsible for day-to-day project management and monitoring of results and risks, including social and environmental risks, and ensures transparency and accountability in monitoring and evaluation and reporting of results. The Project Managers manage their respective components on a day-to-day basis and the Project Board takes corrective action as needed and holds project reviews to assess performance. The Project Implementing Partner provides necessary information and data for timely, comprehensive, and evidence-based reporting, and works to align project-level monitoring and evaluation with national systems. The UNDP Country Office provides support to the Project Coordinator and Project Managers, initiates and organises key monitoring and evaluation activities, and ensures that standard UNDP and GCF requirements are fulfilled to a high quality. It is important for all parties involved in the project to collaborate and share information in order to ensure that the project is effectively managed and achieves its intended results. Overall, M&E occurred through different activities: inception meeting; monitoring visits conducted by the project team; project board meetings involving stock taking of progress; adoption of annual work plans and provision of recommendations for enhanced project delivery; external independent interim evaluations; and elaboration of monitoring reports (quarterly and annual progress reports).

4.5.6 Stakeholder engagement

Stakeholders at the local, national, and regional levels are engaged and benefit from increased use of local renewable energy, reduced reliance on imported fossil fuels, and an improved policy context for addressing climate change in the energy sector. Such a process has kickstarted via workshops and public awareness (local populace, communities, women etc.) in Rodrigues last November and will repeat those in Mauritius in 2023 via outreach regional campaigns, workshops with NGOs and Religious Bodies, workshops with Public Entities etc. All Mauritians will benefit from increased grid stability, lower grid losses, and more stable electricity prices, as well as increased resilience to climate-forced interruptions in electricity supply. Some groups, such as youth, civil society organisations, and residents of Agalega, will benefit directly from the project through the adoption of rooftop PV panels and increased access to electricity. The private sector, particularly small and medium size enterprises, benefits from the strengthened capacity of MARENA and training opportunities. UNDP facilitates collaboration with other key regional and international partners. The project aims to improve the lives of less affluent Mauritians and increase resilience to climate-induced extreme weather events, while also benefiting the entire population of Mauritius. It is positive that the project has a functional and practical stakeholder engagement process, although there may be opportunities to further expand the engagement to include linkages to CSOs/NGOs and increased collaboration with academia.

4.5.7 Social and Environmental standards (safeguards)

The project has developed an Environmental and Social Management Plan (ESMP) in order to assess and mitigate potential environmental and social impacts of the project. The ESMP includes a stakeholder response mechanism for addressing grievances and complaints related to the project, which is handled by the Project Steering Committee and a designated focal point within the project team. In the implementation of the 14 MW BESS, CEB implemented a grievance response mechanism (GRM) in the concerned four sites in order to establish easy-access channels for local communities to voice out and channel their concerns concerning the project to the project team. In this light, notice boards displaying information of the GRM channels were set up in communities in each of the four sites. Whilst the risk log and the Environmental and Social Management Plan (ESMP) have been effective in preventing or reducing negative impacts, **the project design did not address the handling and disposal of used BESS and solar PV panels.** It is important to continuously monitor and assess the effectiveness of these measures to ensure that they continue to be effective in addressing potential risks and impacts. It is also important to regularly review and update the risk log and ESMP as needed to ensure that they are comprehensive and relevant to the project.

4.5.8 Reporting

The internal reporting and obligatory reporting of the project is satisfactory, but there is ample scope to make use of the learning and knowledge it contains for broader knowledge management. The project documentation, minutes of meetings of project boards and the stakeholder consultations confirm a functional and practical stakeholder engagement. Stakeholder engagement is satisfactory. Workshops with NGOs and Religions Bodies are planned to be carried out in 2023.

4.5.9 Communications

The project has established internal communication mechanisms such as In-person meetings, Email, Team meetings, and Zoom meetings but however, it has been a challenge to engage with them for creating a PR plan for the project, and especially Component 2. C2 PMU have therefore been working with CEB to 'advertise' the project at awareness sessions and with stakeholders, for example the Rodrigues Regional Assembly, women organizations, NGOs etc There is room for improvement in terms of external communication and visibility, as well as monitoring and evaluation and knowledge management. It is important to document emerging good practices, extract lessons and learning, and disseminate knowledge products to relevant stakeholders in order to ensure the project's success and sustainability. The IE Team notes that the project is highly regarded by UNDP and that stakeholders appreciate the support and communication provided by the PMU and UNDP. It is important to continue to prioritise effective communication and stakeholder engagement in order to ensure the success and impact of the project.

4.5.10. Risk management

In the course of project design, a total of 10 risks were identified: four operational and technical, and six social and environmental. In terms of the identification of risks, the project did a good job in identifying potential risks although not all risks were identified in the course of project design. For instance, the risk related to lengthy process in obtaining approval for the commencement of some project activities was not part of the identified risks. This is true with component 3 which requires clearance from the PMO and this is yet to be secured by the project. However, it is likely that the need for obtention of a clearance for the implementation of this component only emerged during project implementation and was therefore not valid during the project design phase. This is also true for the risk related to the Covid-19 pandemic which only emerged in the course of project implementation. To the extent possible, the project took adequate measures to mitigate the impact of Covid-19 on the project delivery such as transiting to virtual mood of working and simultaneously working in all four sites for the installation of the 14 MW BESS as opposed to doing so sequentially. A valid risk at project design which was not identified is that of inadequate project staff. The project is facing staffing issues – efforts made to recruit project assistants were unsuccessful as the individuals who were selected declined the offer. Also, the project manager for component 2 had to resign due to under performance. The project addressed this by ensuring that the project coordinator and the project manager for component 1 backstopped the project technically to cater for the void created by the resignation of the component 2 project manager.

Pertaining to the assessment of the identified risk in the project design phase, this was well conducted. However, the mitigation measures proposed for one of the technical and operational risks (risk factor 1) was not adequate. For the risk factor 1 – delay in the procurement of necessary technical assistance for the various components, the project proposed as a mitigation measure, the putting at the disposal of the government UNDP procurement processes which are shorter. This measure was not entirely effective. While UNDP handled some procurements within the project, other procurements had to go through the government central procurement and were subjected to the state's procurement procedures. For instance, the procurement of large CAPEX items under Component 2 had to go through CPB, meeting delays 2 out of 3 times. Hence, the proposed mitigation measure for the procurement delay risk should have gone beyond the use of UNDP procurement processes to measures that address the cause of delays within the government's procurement processes.

Concerning the monitoring and management of identified risks, the project monitored the risks in the course of project implementation and provided updates in the APRs. In the course of project implementation for instance, all environmental and social risks and impacts are tracked on a regular basis as per the requirements of the environmental and social management plans.

4.6 Sustainability

Sustainability is an important aspect to consider when planning any project or initiative. It refers to the ability of the project to continue providing benefits and impact over the long term, even after the initial phase of the project has been completed. A thorough risk analysis is an important step in ensuring the sustainability of a project, as it helps to identify potential risks and vulnerabilities that could threaten the project's success. By working out appropriate risk mitigation strategies, it becomes possible to minimise these risks and ensure that the project is more likely to achieve its goals and objectives over the long term. At the design stage a thorough risk analysis was carried out and has identified a number of potential risks that could impact its success. It is important to regularly review and update the risk log to ensure that it accurately reflects the current status of the project. By identifying the primary risks and prioritising them based on their likelihood and potential impact, it becomes possible to develop appropriate strategies to mitigate these risks and ensure the sustainability of the project. **The overall risk rating for this project as reflected in the ProDoc was moderate, with 10 risks identified in the risk log, incorporating 5 risks and 1 political risk.**

IE2 Assessment of sustainability must consider the risks that are likely to affect the continuation of project outcomes in Phase II and beyond. This sustainability assessment regards four risk dimensions: **financial, socio-economic, institutional framework and governance and environmental risks to sustainability**. Sustainability is evaluated across these four risk dimensions according to a 4-point scale, including likely, moderately likely, moderately unlikely, and unlikely.

There is a strong institutional framework in place for the development of renewable energy in RoM, with the operationalization of agencies like MARENA and URA and the commitment of CEB. Whilst it is not the scope of this project, ensuring financial sustainability will be important in the long-term success of these efforts, and it will be important to consider potential challenges such as economic downturns and the availability of funding. Environmental sustainability is also an important consideration but again it is not within the scope of the project. Proper disposal of used batteries and PV panels at the end of their lifetime will be crucial to minimise any negative impacts on the environment. It will also be important to consider the overall environmental impacts of renewable energy development, such as the potential impacts on wildlife and land use. Overall, it is important to approach renewable energy development with a holistic perspective, considering both the social, political, financial, and environmental aspects. This will help ensure that these efforts are sustainable and beneficial for all stakeholders. There are several factors that contribute to the financial sustainability of renewable energy development in RoM. Government commitment and international donors to funding these efforts is important, as is the ability of institutions embedded in law like MARENA and URA to access green funds from international financial institutions. Whilst the financial sustainability of MARENA is uncertain, the financial sustainability of URA will now be ensured through licensing fees following the proclamation of the Electricity Act (2005). In the budget speech of 2021-22 it was announced that CEB will raise the absorption capacity of intermittent renewable energy through increased battery capacity to some 40 MW. CEB will be able to re-invest the savings associated with avoided generation investment (through facilitating the ramp-up of IPP-generated renewable electricity

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instead of its own generation capacity to meet growing demand) in replacement batteries, since lithiumion batteries have (predictable) finite lifetimes. The commitment of CEB to co-financing and investing in battery capacity also demonstrates a long-term commitment to sustainable renewable energy development. However, this is not financially sustainable for CEB; hence, the launching of the recent hybrid tenders. It will be important to continue monitoring the financial sustainability of these efforts and to identify any potential challenges or risks that could impact funding in the future. This may include economic downturns or shifts in government priorities, as well as changes in the availability of green funds or other financing options. By staying proactive and considering these potential risks, it will be possible to ensure that renewable energy development remains financially sustainable over the long term.

There is strong political support for renewable energy development in RoM, as reflected in the commitments made in the Government Programme 2020-24 and the 2021-2022 budget speech (to achieve 60% of RE in the electricity mix and the phasing out of coal by 2030). The political support for the project and the socio-economic reality provides a conducive environment for the fulfilment of the project. The enhanced GHG emissions reduction target (from 30% in 2015 INDC to 40% in the updated NDC) also shows a strong commitment to sustainability. It is also encouraging to see that there is growing demand for skilled technicians in the renewable energy sector, as this can provide job opportunities, primarily rooftop based small-sized, and support the long-term socio-economic sustainability of these efforts. However, it is important to address the potential challenges, such as the potential for delays in recruiting staff or increased project budgets for installations and/or shortages of skilled technicians. The MARENA Scholarship Scheme for Training of Renewable Energy Professionals is a positive step towards building the local capacity needed to meet these demands, but it will be important to continue to prioritise training and capacity building efforts in order to ensure that there is a sufficient skilled workforce to support the growth of the renewable energy sector. It is important to continue to engage with all stakeholders, including political leaders, in order to ensure that renewable energy development is socially and economically sustainable in the long term.

Institutional knowledge and technical capability of the staff within the PMU, the UNDP CO, M/FEPD, M/EPU, and CEB is assessed as sound. The IE Team confirms that there are strong institutional frameworks in place to support the long-term sustainability of renewable energy development, with (law-embedded) agencies like MARENA (advisory arm) and URA (regulator) playing key roles. It is also positive to see that there is a focus on strengthening the technical capability of these agencies and on building the capacity of local staff through initiatives like the MARENA Scholarship Scheme. However, it is important to be aware of the potential challenges to help the government meet its ambitious targets for RE, such as the need for HR roadmap review and development and the need for continued strengthening of MARENA and URA, and the need for international consultants in absence of specialised staff on the island. These challenges may require the use of creative solutions, such as partnerships with other organisations or targeted training and capacity building efforts. Overall, it will be important to continue to engage with key stakeholders, including CEB, URA, MARENA and MEPU (the enablers of RE up-scaling), in order to ensure the long-term sustainability of renewable energy development after Phase I. It will also be important to prioritise knowledge management and best practices in order to build public awareness and support for these efforts; hence the crucial role of the project team.

The environmental risks to the sustainability of the renewable energy project have been identified and addressed through the development of an updated Environmental and Social Management Plan (ESMP) and the inclusion of a grievance redress mechanism. It is important to continuously monitor for any negative impacts during construction and operation, and to have a clear process in place for addressing any issues that may arise. The monthly logging of events and the requirement for immediate flagging of any substantial events or deviations is a helpful measure to ensure that any potential issues are

identified and addressed in a timely manner (as is the case for the 18 MW BESS). It is also important to consider the potential impacts of natural disasters, such as floods and cyclones, on the sustainability of the project. While it is encouraging that no major cyclones have occurred since the FAA was signed in 2017, it will be important to continue to monitor and prepare for the potential impacts of such events on the project. This may include developing contingency plans or implementing measures to mitigate potential impacts; specialist consultancies will be required but these are unfortunately not budgeted for under this project. The environmental risks to sustainability of the project with regards to the safe disposal of used batteries and PV Panels were not flagged in the UNDP Environmental and Social Screening of the ProDoc. If these materials are not disposed of safely, they can have negative impacts on the environment, including the potential release of harmful chemicals or toxins. In order to address this risk, it will be important to have a clear plan in place for the safe disposal of used batteries and PV panels at the end of their lifespan. This may include partnering with specialised companies or organisations that have experience in the safe disposal of these materials, or implementing recycling programs to ensure that they are properly managed. It is also important to consider the potential impacts of renewable energy projects on other aspects of the environment, such as wildlife or land use. By taking a holistic approach and considering the potential environmental impacts of these projects, it will be possible to ensure that they are sustainable and have a minimal impact on the environment.

Along with the PIMS and Risk Dashboard, the UNDP ATLAS risk log is a tool used to identify and manage risks within a project or initiative. It helps to identify potential risks that could impact the project's success, and provides a way to prioritise and address these risks. The risk log should:

- include a description of each risk, the likelihood of the risk occurring, and the potential impact of the risk on the project.
- include information about the risk mitigation strategies that have been developed to address the risk,
- include any ongoing monitoring or review processes to ensure that the risk is being effectively managed.
- be regularly reviewed and updated to ensure that it accurately reflects the current status of the project and any changes in the risk profile.

On the latest UNDP ATLAS risk log, 4 primary risks are identified related to procurement delays, Covid-19 impact, political will and capacity development of partners. Of these, Covid-19 and procurement delays can be particularly challenging risks to manage, as they can have a significant impact on the project timeline and resources. Political will and capacity development of partners are also important factors to consider, as they can influence the project's ability to achieve its goals and objectives.

It is important to consider the potential risks associated with climate change when planning a project, as it can have significant impacts on the project's sustainability. **Cyclonic winds**, in particular, can pose a risk to solar PV panels, as they can cause damage to the panels and disrupt the project's ability to generate power. It is a good idea to include this risk in the risk log and to develop appropriate risk mitigation strategies to minimise the potential impact of cyclonic winds on the project. In terms of the risk related to the generation of wastes, it is also important to consider the **disposal of used batteries and PV panels** as a potential risk. This is because the improper disposal of these materials can have negative environmental impacts, and could potentially harm the sustainability of the project. It is suggested to develop a plan for the proper disposal of these materials to mitigate this risk. Finally, it is also a good idea to consider the potential risk associated with the **Covid-19 pandemic**. This is an important social and environmental risk that could have a significant impact on the project, and it is important to develop appropriate risk mitigation strategies to minimise the potential risk that could have a significant impact on the project.

pandemic on the project. Like IE1, it is suggested that in the Risk Vulnerability to Climate change, cyclonic winds are considered as a moderate risk to the Solar PV Panels and in the Risk Generation of wastes, disposal of used batteries and PV panels to be included as a moderate risk. It is suggested to add a specific social and environmental risk related to the Covid-19 pandemic.

On the basis of the above, IE1 reported a moderate risk rating for sustainability Phase 2; this IE Team maintains the same rating.

Wars, like the Ukraine-Russia war, can have significant impacts on the project's sustainability too. Wars can disrupt transportation and communication systems, disrupt supply chains, damage infrastructure, and create security risks for project personnel. In some cases, wars can also lead to forced displacement or loss of access to resources, which can impact the project's ability to achieve its goals and objectives. It is important to consider the potential risks associated with wars as part of a thorough risk analysis and to develop appropriate risk mitigation strategies to minimise the potential impacts of wars on the project. This may include measures such as contingency planning and insurance coverage given that the development of alternative supply chains or resources is limited. A summary of the risks to sustainability of the project is presented in Table 10.

Table	10:	Risks	to	project	sustainability	
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Financial risks to sustainability:	 Co-financing does not materialize for some reason Shifting priorities at Government level means less than expected operational funding for URA and MARENA Impact of Ukraine conflict on petrol prices leading to financial hardships for CEB and having to increase electricity tariff, creating more economic stress on population and, as a vicious circle, reduce access and affordability of RE technologies (solar PV). PLR and Interest rate going through the roof, making green loans much less affordable compared to before!! Operational and maintenance of installed PV systems after the warranty period – that's a financial burden which has not been taken into consideration by the project and impacts sustainability (we have seen some rooftop PV systems in Rodrigues left to rot).
Socio-economic risks to sustainability:	 As above in terms of economic risks for MARENA, URA, CEB Socio-economic shifting priorities from RET to Food, Shelter and Health for example. Anti-pollution laws with regards to battery storage, solar panels could make prices go up and reduce affordability of systems
Institutional framework and governance risks to sustainability	 MARENA becomes a mere unit under MEPU and not able to fully operate as per mandate Standards and regulations become bypassed and forgotten in a drawer in absence of functional enforcement agency (MARENA). Governance overlap between MARENA, URA, MEPU and CEB – it has to be made clear.

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The IE2 Team therefore extends the risks to cover the impact of wars and maintains a moderate risk rating for sustainability Phase 2.

4.7 Country ownership

Ownership of the GCF project is reflected at various instances: from government level down to the grassroot level since the start of the formulation phase and clearly articulated in national development plans and policies, Government programmes and national budgets. The design phase of the project involved consultations with the GCF Secretariat and other relevant institutions such as: Ministry of Finance and Economic Development; Ministry of Energy and Public Utilities; Central Electricity Board; Ministry of Environment, Sustainable Development, Disaster and Beach Management; and Agence Francaise de Développement (AFD). Furthermore, a stakeholder consultation workshop on the funding proposal was organised in July 2015 and this saw the participation of the government, private sector actors, NGOs and regional organizations. The consultation and involvement of these diverse stakeholders in the course of project design meant that their views and concerns were taken into consideration in the project design.

This GCF project has been instrumental in charting the roadmap for the electricity sector from a heavily fossil dependence to a greener secure economy. The *Renewable Energy 2030 Roadmap for the Electricity Sector* was launched in August 2019, as being a key support for the Government of Mauritius to achieve the target of 35% of renewable energy by 2025.

The introduction of new technologies such as BESS, AGC, GIS, ADMS, AMI, etc has boosted the confidence level so much so that the RE target in the electricity mix has been revisited to 60% with emphasis on phasing out of coal by 2030 (2021-22 budget speech). This no doubt constitutes a solid sign of longer-term engagement and national ownership. (https://budgetmof.govmu.org/Documents/2021_22budgetspeech_english.pdf). With the continued political support, MEPU continues to play a strong role policy-wise and CEB utility wise.

Other signs of an active national ownership come from the:

- establishment of the Climate Change Act;
- recent proclamation of the 2005 Electricity Act;
- harmonisation of the 1964 CEB Act
- involvement of the MEPU minister himself in chairing of a high-level meeting on the revision of the RE roadmap

- belief and trust of government officials, public and private sector, NGOs and CBOs in the • project;
- clear commitment and engagement by key stakeholders in the implementation of the project; •
- generation of significant buy-in and appropriation by targeted partners and beneficiaries; •
- re-orientational efforts of both the public and private sector; •
- no-VAT policy on the different components of photovoltaic and other RE systems; •
- pledge to fill the vacant positions at MARENA despite the difficult economic situation in the • present pandemic,
- re-iterated vision of post-pandemic economic recovery to a green one,
- openness and willingness of financial institutions (e.g. AFD, AfDB, Clinton Foundation and DBM) to step in and help out:
- CEB's technical and financial commitment; no wonder why the CEB has assumed full ownership of the project. Phase 1 co-financing of CEB is estimated at 160% of the sum originally committed. CEB has recently launched RFPs for utility scale solar hybrid RE systems with BESS for a cumulative capacity of 140 MW and continues to support SSDG and MSDG for solar panels. The scaling up of the installed 18 MW BESS to 38 MW BESS will be enhancing the contribution of intermittent RE on the grid¹¹.

4.8 Innovativeness in result areas

A number of result areas stems out from innovative ways of doing things:

New ways of handling projects:

- Deep diving from component wise through appointment of PMs;
- Covid-induced changes new ways of working including virtual meetings, new ways donor funded projects are delivered. Zoom technology capacity has been formally introduced in the implementation of the project.

New technologies on the utility grid:

- introduction of hardwares/softwares on Grid: BESS/AGC/ADMS/GIS to strengthen the grid capacity and improve its reliability;
- using a new tool, the National Scheme for Emerging/Innovative Renewable Energy Technologies (NSEIRET), for introducing potentially new technologies on the RE horizon;

Mainstreaming gender:

Women's involvement (awareness/training entrepreneurs). The arrangements being tried out by the project for community awareness- raising and training of women entrepreneurs through the NWC which has not been done before, provides an example of additional innovation aimed at and promoting local ownership by beneficiaries.

Increase access (SDG7)

• Home solar

¹¹ In addition to 1.5 MW is in Rodrigues

• GCF-support to the expansion of the rooftop PV sector in Mauritius using an upfront partial grant mechanism for households and non-commercial adopters rather than a FiT.

4.9 Unexpected results, both positive and negative

One unexpected result is the raising of expectations among stakeholders following the announcement of the ambitious RE targets by the Government in the 2021-22 budget speech of producing 60 percent of the country's energy needs from green sources by 2030 as well as the total phasing out of the use of coal before 2030. The project has been credited by all stakeholders for paving the way for the more ambitious RE targets by the Government.

Unexpected Negative Results

1. Continued Delay in the disbursement of the AFD loan after procurement issues linked with the supply of GIS substations for CEB and which was not anticipated in the FAA. It is important to note that, at the time of design and approval for this project, GCF did not have a policy on co-financing as it does now. Matter is still unsettled at IE2. Project, however, will not be jeopardised by delays for the GIS substations^{*12} -

Unexpected Positive Results

- 1. The IE2 Team reaffirms an Improved social capital in terms of creating a culture of working together and building trust among key stakeholders, perhaps due to the frequent and physical presence of project staff in the organisation (IE1 report).
- 2. Covid impact stakeholders devising creative ways of working together for the successful timely implementation as programmed despite the Covid 19 challenges.
- 3. Engagement of MFEPD with the AfDB is quite likely, according to the M/FEPD representative, resulting in the financing of 10 GIS substations of the CEB given that the implementation of the project is crucial to contribute towards reliably achieving the Renewable Energy Target of 60% by 2030. The AfDB is currently finalising the Project Appraisal Report which will be presented to its Board by March. The CEB is expected to launch the procurement exercise by the end of March.

We note that DBM was not initially a partner but they may be coming onboard for parallel funding under Phase 2 to cater for the shortfall in AFD funding. Also, CEB has increased its subsidy portion for 25 MW scheme significantly. This strengthens the likelihood of project success as it is more likely to attract beneficiaries to apply for the scheme.

¹² GIS substations add reliability to the grid but are not the outputs of the project

4.10 Replication and Scalability

With the materialisation of the GCF project to near 100% in Phase 1 and the RET projected increase by some 140 MW, the CEB is quite confident that the vision of the Government will be realised. The operational URA as a full-fledge regulatory body, the unbundled and re-engineered CEB, the key advisory role of MARENA (despite staffing issues), with the blessing of the parent ministry, the mushrooming of a number of IPPs are all testimonies that the platform for realising the revised 2030 threshold of 60% will be achievable. It is expected that government gets AFD's continued full support (with or without further co-financing) and welcomes the involvement of new players: AfDB for acquisition of the 10 GISs which will provide reliability on the grid, DBM's eagerness and preparedness to form an integral part of this green ecosystem through co-financing. On the technical note, CEB has not only embraced new technologies but also mastered these be it the AGC (currently being run on a precautionary operational level), the ADMS and associated hardware acquisition, the GIS substation, the BESSs for storage/Voltage and Frequency controls, and last but not least, establishing the roadmap for significant energy security with the incorporation of more hybrid PV technologies with storage (at least 140 MW). The success story of ROM will surely be of interest not only to other SIDs but also to many countries across the world. There is thus good scope for replication of project interventions and scalability of activities implemented. Critical is the strong country ownership and the political priority given to renewable energy development. A further factor for replication potential is the recent ambitious RE targets announced in the 2021-22 budget speech. For replication and scaling up efforts to be successful the lessons learnt by the project must be documented and shared through an effective knowledge management strategy.

Replicability and scalability of:

- 1. The BESS thanks to experience and training already acquired from the 18MW
- 2. AGC same as above
- 3. CEB RE Schemes Home Solar Project is a good example, replicated as a Phase II, with some tweaking, for low-income households.
- 4. SSDG schemes for other categories (middle income, NGOs)
- 5. Scheme for Public Educational Institutions can be easily replicated for other public buildings

4.11 Gender Equity

During the project design, a gender analysis was undertaken to enable gender mainstreaming throughout implementation. The gender analysis, through stakeholder engagement and consultation enabled:

- Assessment of the gender-related activities in responding to the expanding threat of climate change on the energy and transport sector, including gender roles and responsibilities, resource use and management, and decision making raised by the project;
- Demonstration of the need for gender-disaggregated data and indicators to establish a baseline in which to measure improvements and identify areas of focus; and
- Establishment of recommendations to incorporate into the Gender Action Plan.

The Gender Assessment and Action Plan (GAAP) provides suggested entry points for genderresponsive actions to be taken under each of the Activity areas of the project. Main actions include ensuring that female-headed households have equal participation in the project, reviewing all documents from a gender and climate change perspective and more female participation is achieved in all project components. In addition, specific indicators are also proposed to measure and track progress

on these actions at the activity level. The lead role of the gender mainstreaming activities is assigned to the Gender and Monitoring and Evaluation Officer in the PMU.

The GAAP explicitly calls for the hiring of a critical mass of women to work in MARENA (and URA) and the training of women to install, operate and maintain solar PV systems.

- The project has emphasised on representation of at least 30% women members in the Project Board and Sub Boards, and women staff members among newly recruited staff at MARENA. At IE1, 5 out of 10 staff at MARENA were women, while women account for 9 out of 14 staff at URA.
- For the training of women to install, operate and maintain solar PV systems, the targeted women were mostly housewives or entrepreneurs running micro and small businesses. These women were targeted to enhance their understanding of renewable energy so that they can be grassroots agents/champions of change in the shift to RE. In line with Sustainable Development Goal 5 SDG5 on gender equality, the project has the objective to target low-income and women-headed households (most likely inside the low-income bracket also especially in the wake of the pandemic). Awareness campaigns were organised by UNDP under the GCF project to target women to increase the participation of women in the renewable energy sector. At IE1, about 1500 women benefited from awareness sessions and training organised under the project. The sessions have helped many women better understand the principle of RE and its benefits and stimulate their interest in the deployment phase (Phase 2) of the project, which will see low-income households benefit from rebates for solar PV equipment.
- The rating at IE1 was therefore concluded as satisfactory.
- At IE2, the staff at MARENA has reached a **critical level** of 1 technical (RDO) with the resignation of the CEO. At URA, 5 out of 11 staff remaining are women.
- The groundwork for gender and socio-economic profiling of beneficiaries has already been kickstarted by the **Component 2** PMU and the Implementing Partner (CEB) on the deployment schemes to be adopted for households, NGOs, and public buildings. At the household level, the project inevitably targets low-income households (as identified either from existing Tariff 110A at the level of the CEB or from the National Social Register of Mauritius) as well as womenheaded households (from same lists through identifying the female account holders or house owners or tenants). The custodian and administrator of the Social Register, the National Empowerment Foundation (NEF), has been included in the *Project Steering Committee for Component 2*.
- For Phase II there must be proactive participation of vulnerable households to ensure the inclusion of the most vulnerable, under the principle of no one is left behind. For instance, single mothers or other vulnerable households may not be able to prioritize and dedicate time to fill out the necessary forms, and hence may be left behind and miss out on the availability of rooftop solar panels. Documentation of these inclusive efforts together with the NEF will have to be part of the M&E.
- NDA representative confirmed that M/FEPD puts a lot of focus on this component; gender considerations are mainstreamed into all project activities, ranging from the composition of Project boards to the beneficiary of awareness raising and training undertaken under Component 2.
- In his interview, the Head of Environment at UNDP mentioned that the project had a gender action plan and a SEP that was reviewed in the course of the recent inception meeting (Phase 2); and there was a specific presentation of gender mainstreaming in the inception report. For Phase II there must be proactive participation of vulnerable households to ensure the inclusion

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of the most vulnerable, under the principle of no one is left behind. In line with SDG5, the project has the objective to target low-income and women-headed households (most likely inside the low-income bracket also especially in the wake of the pandemic). The project will try to target at least 30% women-headed households, that is, some 1,200 households out of the total of 3,500 low-income households to benefit from a free rooftop solar PV installation.

• The gender rating at IE2 is therefore concluded as Satisfactory.

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5. Conclusions and recommendations (based on key findings)

5.1 Conclusions

Progress Implementation & Adaptive Management: The project has been effective in achieving its targets for Phase I and has implemented adaptive management strategies to address any challenges. The project has received additional co-financing from various sources, including a grant from the SADC Secretariat and the Clinton Foundation Initiative. The PMU is adequately staffed and has demonstrated dedication and technical expertise in managing the project. Work planning and financial management have been satisfactory, and the project has established an enabling environment for the work of other donors. Internal reporting and stakeholder engagement have been functional, but there is room for improvement in knowledge management and communication. The project has also implemented effective mitigation measures to prevent or reduce negative impacts, but has not addressed the handling and disposal of used BESS and solar PV panels. A notable effort of PMU in order to ensure that the project stays on track and meet its target of 25 MW of solar panel installations has been the development of a detailed adaptative procurement plan. Overall, the GCF project has demonstrated effectiveness in achieving its targets and adapting to changing conditions, but there are areas for improvement in communication, knowledge management, and stakeholder engagement.

Sustainability: Sustainability is a key aspect to consider when planning any project or initiative, as it refers to the ability of the project to continue providing benefits and impact over the long term, even after the initial phase of the project has been completed. To ensure the sustainability of a project, it is important to conduct a thorough risk analysis to identify potential risks and vulnerabilities and develop appropriate strategies to mitigate them. The overall risk rating for this project was moderate, with 10 risks identified in the risk log, covering social and environmental, technical and operational, and political risks. To assess the sustainability of the project, four risk dimensions were considered: financial, socio-economic, institutional framework and governance, and environmental risks. Financial sustainability is an important factor for the long-term success of renewable energy development in RoM, and will depend on government commitment and access to international funding, as well as the ability of institutions like MARENA and URA to access green funds. Environmental sustainability is also a key consideration, including proper disposal of used batteries and PV panels and minimization of negative impacts on the environment. To ensure sustainability, it is important to approach renewable energy development with a holistic perspective, considering social, political, financial, and environmental factors.

Country Ownership: Based on the feedback of the stakeholders, there is strong country ownership of the GCF project and a clear alignment with national development plans and policies as articulated in recent Government Programme (2020-2024) and budget speeches. The strong engagement and commitment of key stakeholders, including Government entities and CEB, is also an important factor in the success of these efforts. CEB has assumed full ownership of the project through masterminding the roadmap, technical upsurging and co-financement. It is also positive to see that the GCF project is viewed as a key support for the government's renewable energy goals and as a potential catalyst for economic recovery through a green economy. Ensuring that these efforts are aligned with national priorities and policies will be important in ensuring their long-term success and sustainability. Thus, it is important to continue to engage with all stakeholders and to prioritise good governance and

coordination in order to ensure the long-term success of the GCF project and to support the growth of renewable energy in RoM.

Innovativeness in result areas: The GCF project is introducing new technologies on the national grid (such as BESS and the AGC system) and innovative approaches to support the growth of renewable energy RoM. The use of these novel technologies, as well as the focus on community awareness-raising and training of women entrepreneurs, are all examples of innovative approaches that can support the long-term success and sustainability of these efforts. The use of an upfront partial grant mechanism for households and non-commercial adopters, rather than a feed-in tariff, is also an innovative approach that can help to encourage the adoption of rooftop PV systems. This can support the overall goal of enabling a paradigm shift to a low carbon economy. It is also interesting to see that the Covid-19 pandemic has indirectly introduced an element of innovativeness in the way donor-funded projects are delivered, with the use of virtual technology becoming more prevalent. This demonstrates the importance of being flexible and adaptable in order to continue to make progress towards sustainability goals.

Unexpected Results: The project has had some unexpected results, both positive and negative. The creation of a culture of working together and building trust among stakeholders and the ability of national stakeholders to find creative solutions to continue the project during the COVID-19 pandemic are positive unexpected outcomes. However, there was also a delay in the disbursement of the AFD loan due to procurement issues with the supply of GIS substations. The latter in no way impacts on the deployment of the 25 MW solar panels and the achievement of targets in Phase II. Nevertheless, it is expected that, in the coming year¹³, the co-financing amount will materialise for the GIS substations which will bring added reliability to the national grid operations, especially in the 60% RE penetration.

Replication and Scalability: The project has the potential to be replicated and scaled in other contexts due to a number of factors, including strong country ownership and political priority given to renewable energy development, a conducive policy and regulatory setting, and the recent announcement of ambitious renewable energy targets. The project has also done important background work, such as conducting feasibility studies and implementing AGC and BESS systems, which can be useful for replication efforts. However, it will be important to document the lessons learned from this project and effectively share that knowledge through a knowledge management strategy in order for replication efforts to be successful. The evaluation team also believes that replicability in other small island developing states is likely.

Gender Equity: The project has given due consideration to gender equity in all of its activities and has implemented a gender action plan that includes hiring a critical mass of women to work in MARENA and training women to install, operate, and maintain solar PV systems. Gender considerations are also mainstreamed into all project activities, including the composition of project boards and the selection of beneficiaries for awareness-raising and training efforts. The project has also emphasised the representation of women on project boards and sub-boards, and has hired a significant number of women among its staff. To date, approximately 1500 women have benefited from awareness sessions and training organised under the project. In Phase II, the project plans to proactively engage vulnerable households to ensure their inclusion and ensure that no one is left behind. It will be important to document these inclusive efforts and work with the National Empowerment Foundation (NEF) as part of the project's monitoring and evaluation efforts.

¹³ If loan agreement is signed between AfDB by March 2023

5.2 Lessons learned

The Lessons learned at IE1 and the status at IE2 is summarised in the table below.

#	Lessons Learnt @ IE1	Remarks @ IE2	
1.1	Recruitment process for staff to be initiated immediately after project approval	The project activities for this project experienced substantial delays due to slow recruitment of the team, resulting in a nine-month delay after project approval Despite these initial setbacks, the team was eventually able to overcome these challenges and make progress on the project. In hindsight, it would be beneficial to start the recruitment process immediately after project approval and have the team in place before the inception workshop in order to prevent slow start-up phases like this in the future. It was unfortunately a repeat scenario for Phase II and Phase II IW where the Project Coordinator only joined a day before, and no Project Assistant for C2.	
1.2	Work planning to better anticipate delays in the procurement process	The PMU should anticipate and plan for potential further impacts of the pandemic/war on Phase II activities, particularly when procuring items from abroad. Unfortunately, adherence to 2006 PPA significantly limits ways to mitigate the impact of the pandemic/war on the project for essential items in the supply chain. The time frame for the procurement process through the Central Procurement Board (CPB) and the possibility of appeals through the Independent Review Panel (IRP) should be taken into consideration in the work planning. The impact and probability of this risk should be properly evaluated in the risk log.	
1.3	For co-financing through a loan by another financial institution, there must be clear interpretation if the loan is part of the project or in parallel to it.	If co-financing is necessary, it's important to clearly define whether the loan is part of the project or parallel to it, in order to avoid misunderstandings or confusion. It's also important to plan for potential delays in the disbursement of co-financing, as this can help to adjust for implementation hurdles and ensure the smooth progress of the project.	
1.4	For more effective Monitoring and Evaluation (M&E), there must be due diligence in the formulation of indicators during project design and at the start of the project.	It is important to ensure that the indicators in the Project Results Framework (PF are SMART (specific, measurable, attainable, relevant, and time-bound) in order ensure the quality of the monitoring and evaluation (M&E) process. SMA indicators can provide clear, concise, and quantifiable information about the progr and impact of a project. To ensure due diligence in the formulation of indicators is important to involve all relevant stakeholders in the process, including proj beneficiaries, in order to ensure that the indicators are relevant and meaningful them. It is also important to conduct a thorough analysis of the project's objecti- and activities in order to identify the most appropriate indicators. In addition, i important to establish clear baseline data for the indicators, as well as set realise and achievable targets for each indicator. This will allow for the tracking of progr and the identification of any challenges or gaps in the project's implementati Overall, ensuring that the indicators in the PRF are SMART is essential for effective planning, implementation, and evaluation of a project.	
1.5	A contingency plan is needed to assess and mitigate against potentially dangerous variants COVID 19 impacts in Phase II.	It is important to include a contingency plan for addressing the impact of Covid-19 in project reports in order to identify potential solutions and mitigate any negative effects on the project. This can be done by including a specific subsection on Covid- 19 contingency planning in existing quarterly reports. It is also important to ensure proper stakeholder engagement in the review of key deliverables, including the Covid-19 contingency plan. This can be done by involving appropriate stakeholders, such as project beneficiaries and implementing partners, in the review process. This will allow for a more comprehensive and holistic understanding of the potential impact of Covid-19 on the project and will help to identify any potential risks or challenges that need to be addressed. Overall, the inclusion of a Covid-19	

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		contingency plan and the proper engagement of stakeholders in the review of key deliverables can help to ensure the success and sustainability of a project in the face of any challenges or disruptions.
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In addition to the above, new Lessons learned (between IE1 and IE2) are summarised in the table below.

#	Lessons Learnt @ IE2	Remarks
2.1	A contingency plan is needed to assess and mitigate against War impacts in Phase II.	 It is important to assess and mitigate against the potential impacts of war (e.g. Ukraine-Russia war) on a project, particularly during the planning phase. A contingency plan can help to identify potential risks and challenges associated with war and to develop strategies for addressing them. There are several steps that can be taken to assess and mitigate against the impacts of war on a project: Identify the potential risks and challenges: <i>This includes understanding the specific context of the project and the potential risks and challenges that may be faced, such as the likelihood of conflict and the potential impact on project resources.</i> Develop strategies for addressing the risks: <i>This can include developing contingency plans to respond to potential disruptions.</i> Engage with stakeholders: <i>It is important to engage with relevant stakeholders, including project beneficiaries, implementing partners, and local authorities, to understand their needs and concerns and to ensure that the contingency plan is appropriate and effective.</i> Monitor and review the contingency plan: <i>It is important to regularly review and update the contingency plan in light of any changes in the project context or any new risks that may arise. This can help to ensure that the plan is responsive and effective in addressing potential impacts of war on the project.</i>
2.2	A contingency plan can be developed to address high turnover for project beneficiaries	 Both MARENA and URA staff have gained considerable training (HACT, MIS, Master RE, RETScreen to cite a few) with the aim to accomplish the project successfully and sustainably. High turnover in a project can have negative impacts on the project's success and sustainability. Some steps that can be taken to address high turnover include: Identify the root causes: <i>It is important to understand the reasons behind the high turnover, such as low job satisfaction, lack of opportunities for career advancement, or a toxic work environment.</i> Develop strategies to address the root causes: <i>This can include implementing measures to improve job satisfaction, such as providing training and development opportunities or creating a more positive work culture.</i> Plan for succession: <i>It is important to have a plan in place to ensure that key skills and knowledge are not lost when staff leave the project. This can include identifying and training potential successors or creating a system for transferring knowledge between team members.</i> Communicate with staff: <i>It is important to keep staff informed about the contingency plan and to encourage open communication about any concerns or issues that may be contributing to high turnover.</i> Monitor and review the contingency plan: <i>It is important to regularly review and update the contingency plan in light of any changes in the project context or any new risks that may arise. This can help to ensure that the plan is responsive and effective in addressing high turnover.</i>
2.3	Embracing New Technologies - Case of Floating	 Some potential lessons learned from the floating solar PV panel project at Tamarind Falls include: The importance of thorough planning and investigation: <i>It is important to conduct a thorough investigation and assessment of a project before moving forward with</i>

	PV	 implementation. This can help to identify any potential challenges or barriers and to develop strategies for addressing them, especially on the technical and financial sides as was the case for FPV The need for effective communication and collaboration: Effective communication and collaboration with all relevant stakeholders, including government agencies, consultants, and local authorities, can be critical to the success and sustainability of a project. Right time to set up the public / private structure recommended under the Green Job Framework. Addressing potential challenges and barriers: It is important for project stakeholders to keep track of the progress of the project and to identify any potential challenges or barriers that may be causing delays. This can help to ensure that the project is implemented effectively and efficiently. The value of engaging with stakeholders: Engaging with stakeholders, such as project beneficiaries and implementing partners, can help to identify any additional resources or support that may be needed to move the project forward. It can also help to build support and buy-in for the project. There has been a national dialogue on RE following COP 26. Recommendations went up to Cabinet level. Actions still lacking due to missing technical staff at MARENA and funding 	
2.4	Embracing New Technologies - Case of Cascading Hydro Project	 There are several lessons that can be learned from this case study: Streamlining the administrative process can help to speed up the implementation of projects. <i>This can be achieved by holding regular meetings between different agencies to discuss and make decisions on projects.</i> Good communication is key to the success of a project. <i>This includes communication between the different agencies involved in the project, as well a between the proponent and the agencies.</i> Project hosting agencies, such as MARENA in this case, should provide support and assistance to proponents to help address any challenges or issues that may arise. Prioritizing sustainable utilities, such as those provided by the Tesla Cascading Hydropower Plant, is important for achieving the Sustainable Development Goals. The URA should be fully enacted as soon as possible to provide the necessary framework for new projects. It's important to involve all relevant stakeholders in the decision-making proce and to address any concerns or issues that may arise. This includes engaging w landowners and responding to communications from proponents in a timely manner. The process for obtaining additional approvals, such as those from the CWA (Central Water Authority), WRU (Water Resources Unit), BRDC (Black River District Council), and Forestry, should be streamlined to avoid duplication of efforts. 	
2.4	Commitment versus Financial Sustainability	It's good to see that CEB is committed to renewable energy development, but it's also important for the organization to consider financial sustainability. Launching hybrid tenders, which combine elements of traditional and renewable energy sources, can help to balance these goals. This can allow CEB to continue investing in renewable energy while also ensuring that it has a financially sustainable business model. It's important for organizations to find a balance between their commitment to sustainability and the need to be financially viable in the long term.	

5.3 Recommendations

IE1 has formulated 10 recommendations with the aim of improving project effectiveness and enhancing the likelihood that project results will be sustained after Phase I. The status of these recommendations at IE2 are summarised in the table below.

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#	IE1 Recommendation	By when By whom	Status at IE2
	Recommendations for Management		
1.1	Immediate start of Phase II, inception workshop and completion of activities of Phase I	December 2021 PMU, UNDP	Inception workshop for phase 2 organised in December 2022.
1.2	Extension of Phase II by two years	By Q1 2022	Phase 2 started in December 2021. The accelerated timeline presents a major challenge, particularly in the context of the ongoing pandemic/war, which could lead to procurement delays and supply chain disruption. At least two years of extension will be required to make up for the Phase I natural time delay and 1 year due to COVID/progress issues.
1.3	Use unspent funds for capacity building and technical support	By Q4 2023 PMU, UNDP	The remaining funds from phase I if any, can be used for additional capacity building.
1.4	Set up a Public-Private Implementation committee for PV deployment in Phase II.	By Q1 2022 PMU and Project Board	There is a need to set up this Committee to look into other issues as well.
1.5	Launch a consultancy study on used BESS and Solar PV Panels recycling and disposal and help CEB with a decommissioning plan for the BESS at the end of their lifetime.	By Q4 2022 PMU and Project sub-board for component 2	CEB confirmed that this is not covered in the RFP for battery. However, at disposal, the battery supplier could be contacted for needful or the RFP can be launched for their disposal. MEPU affirms that a Sub-Committee, chaired by MARENA, set up under the Electric Vehicle Implementation and Monitoring Committee, is looking into the disposal of batteries and in parallel into the disposal of PV panels.
	Recommendations for Project De	esign	
1.6	Review the allocation of PV systems among the categories of end users	By Q1 2022 PMU, UNDP	The review of the allocation of PV systems is yet to be conducted for low-income households
1.7	Develop and implement a communication and knowledge management strategy and organise Annual Review workshops	By Q2 2022 PMU, UNDP	Aspects of communication and knowledge management have been incorporated in the Phase 2 Inception Workshop. It would be a good idea to have the Annual Review Workshops implemented. But provided the project has a full team on-board. Else, communication strategy for the project must be developed with clear deliverables / outcome shared with the remaining components. PMU has indicated that they cannot rely solely on the implementing partners; it has not worked.
	Recommendations for Monitorin	g and Evaluation	
1.8	Revision of project indicators, targets, and update of the PRF	By Q1 2022 PMU, UNDP, GCF	Donor in consultation with UNDP has requested changes to the logframe that were eventually agreed and formalised in 2022.

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1.9	Monitor the performance of the BESS and AGC system	By Q4 Yearly PMU and Project sub board for component 2	A rigorous Monitoring and Evaluation is being implemented by CEB.
1.10	Monitoring and Evaluation of the RE policy	By Q1 2024 UNDP	MEPU is mandated to carry out Monitoring and Evaluation of the RE policy.

The recommendations at IE2 are captured in the table below:

#	Recommendation	By when By whom	Remarks
	Recommendations for Mana	igement	
2.1	Recruitment at MARENA	MARENA, MEPU	 MARENA has reached a critical stage and that there is a need to immediately recruit additional staff to support the current management. This is likely to be a challenging situation, as maintaining adequate staffing levels is essential for the effective operation of any organisation. Generally, there are a few potential strategies that could be considered to address this issue: Recruitment: As mentioned, recruiting additional staff to support the current management can help to alleviate the staffing shortage in the short term. It may be helpful to work with a recruitment agency or to advertise the open positions widely in order to attract a diverse pool of qualified candidates. Training and development: Providing training and development opportunities for existing staff can help to build capacity and improve retention rates. This could include offering leadership development opportunities. Organisational restructuring: Reviewing the organisational structure and identifying any inefficiencies or areas where responsibilities could be shared or redistributed could help to better utilise existing staff resources. Temporary staff: Hiring experienced and specialised temporary staff on a short-term basis can help to fill staffing gaps until permanent hires can be made. MARENA should also explore ways and means through financing strategies to fund these specialist as recommended in funding strategy report
			combination of strategies that can help to address the staffing shortage at MARENA in a timely and effective

			manner. Pending recruitment, several Service Training to Mauritius (STMs) are proposed to be immediately recruited and secondment strategies (from MEPU and CEB) that will accompany the current management till the recruitment of the CEO and other staff. MARENA to also find ways and means through financing strategies to fund specialists as recommended in funding strategy report.
2.2	Extension of Phase II by two years	By Q4 2023 GCF	The implementation of Phase I of the project has been extended by one year due to the extension granted in October 2020. It is important to note that the Phase II timelines are still based on the original FAA (Funding Agreement) and that the final evaluation report submission has also been extended by one year. It will be necessary to request an additional two-year extension for Phase II, with one year being added due to the extension in Phase I and another year as contingency. It is important to carefully plan and manage the extension of the project to ensure that it is implemented effectively and efficiently. Effective communication and collaboration with all relevant stakeholders can be critical to the success and sustainability of the project. It may be helpful to engage with stakeholders, such as project beneficiaries and implementing partners, to identify any additional resources or support that may be needed to move the project forward. It can also be helpful to regularly review and update the project plan in light of any changes or challenges that may arise.
2.4	Installation of innovative technological solutions in Mauritius (under the NSEIRET Scheme)	MARENA	 Based on the difficulties/challenges faced by TTT, some recommendations for future installation of technological solutions in Mauritius includes: streamlining the administrative process to make it more efficient;. improving communication between agencies and proponents, including responding to communications in a timely manner and holding face-to-face meetings to address concerns. Providing support and assistance to proponents from project hosting agencies, including regular site visits to understand and address any challenges that may arise. Prioritizing sustainable utilities and enacting the URA as soon as possible to provide the necessary framework for new projects. Involving all relevant stakeholders in the decision-making process and addressing any concerns or issues that may arise.

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			• Streamlining the process for obtaining additional approvals from concerned agencies.
2.5	Setting up a public/private structure as proposed by the Green Job Framework to facilitate collaboration and communication among stakeholders, and can help to ensure that the project is aligned with the GCF recommendations.	MEPU	Effective communication and collaboration is indeed important for the success and sustainability of a project. It is important to involve all relevant stakeholders in the planning and decision-making process, and to ensure that there is open and honest communication throughout the project. This can help to build trust and confidence among stakeholders, and can help to identify and address any potential issues or challenges that may arise. The Green Job Framework recommended the setting up a public/private structure that can help. This structure can help to facilitate collaboration and communication among stakeholders, and can help to ensure that the project is aligned with the GCF recommendations. It's important to set up this structure at the right time, so that it can effectively support the project and contribute to its success.
2.6	Environmental sustainability	Future GCF Energy projects	Environmental sustainability is an important consideration. Proper disposal of used batteries and PV panels at the end of their lifetime will be crucial to minimise any negative impacts on the environment.

Annex 1: Interim Evaluation ToR (excluding annexes)

Type of Contract: Individual Contract

Languages Required: English

Duration of Contract: 40 working days

Post Level: International Consultant	Post Level: National Consultant
Duty Station: Home based	Duty Station: Home based with site visits
Starting Date: 1 Dec 2022	Starting Date: 23 Dec 2022





Terms of Reference for the National Consultant for the Independent Interim Evaluation of the 'Accelerating the Transformational Shift to a Low Carbon Economy in the Republic of Mauritius' Project (PIMS 5681)

INTRODUCTION

This is the Terms of Reference (ToR) for the **National Consultant** for Interim Evaluation of the UNDP-supported GCF-financed project titled '*Accelerating the transformational shift to a low carbon economy in the Republic of Mauritius*' (PIMS 5681) implemented through the Ministry of Finance, Economic Planning and Development. The project started on the 1 September 2017 and is in its 3rd year of implementation. This ToR sets out the expectations for this Interim Evaluation which is a requirement set in Schedule 4. of the Funded Activity Agreement (FAA) for the project.

PROJECT BACKGROUND INFORMATION

The Green Climate Fund (GCF), through the United Nations Development Programme (UNDP), is providing financial support and expertise to assist the Government of Mauritius in achieving their targets set in the Long-Term Energy Strategy (2011-2025). In this context, the project – Accelerating the transformational shift to a low-carbon economy in the Republic of Mauritius – will remove the principal bottlenecks to investment in low-carbon development for: (i) grid-connected intermittent renewable energy; and (ii) mini-grid PV for the principal outer island, Agalega. It will be implemented in a two-phase approach so as to reduce the implementation risks to the GCF and ensure that the second funding disbursement is contingent upon successful completion of the first phase.

The Long-Term Energy Strategy (2011-2025) has been replaced by the Renewable Energy Roadmap 2030 for the Electricity Roadmap with a renewed target of achieving 35% of RE by 2025 and 40% of RE by 2030.

The project, which is implemented at national level, is funded by the GCF grant resources of USD 28.21 million, where it is split across phase 1 (USD 12 million) and phase 2 (USD 16.21 million), to overcome identified barriers to low-carbon investment. Overall, the project will result in a reduction in greenhouse gas emissions of 4.27 million tCO2e over the lifetimes of the investments enabled, at a cost to the GCF of just USD 6.6/tCO2e. The FAA was signed in June 2017 with the planned start date for activities set in September 2017. The Inception Workshop was held on 11 and 12 November 2017.

The first case of Covid-19 was registered in Mauritius on 18 March 2020 and a national curfew was imposed on 20 March 2020 and further extended till 1 June 2020. As at mid-August 2020, the country has registered 344 cases and 10 death and economic activity is expected to shrink by 13% in 2020 notably due to reduced activity in the tourism sector. Project implementation was also affected owing to disruption in supply chain, travel restrictions and curfew imposed for sanitary reasons. While most of the consultations were held remotely on the project, some activities like the setting up of the 18 MW Battery Energy Storage System (BESS) was severely impacted as the various components of the system were manufactured in Korea, China, and France and the assembly in Spain. Moreover, as at August 2020, travel restrictions are still in place in Mauritius with uncertainty remaining on when these restrictions will be waived. As the commissioning and testing of the BESS will require support from technical expertise outside of Mauritius, the exact date for the completion of the installation of the BESS, corresponding with the end of Phase1, is expected to be delayed by up to 1 year from the set date in the FAA (June 2020).

OBJECTIVES OF THE INTERIM EVALUATION

The Interim Evaluation 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 Interim Evaluation will also review the project's strategy and its risks to sustainability.

The Interim Evaluation team will assess implementation of the project and its alignment with FAA obligations and progress towards the achievement of the project objectives and outcomes as specified in the Project Document. The evaluation will 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 Interim Evaluation will also assess the following:

- Implementation and adaptive management
- Risks to sustainability
- Relevance, effectiveness and efficiency of projects and programmes;
- Coherence in climate finance delivery with other multilateral entities;
- Gender equity;
- Impact of covid-19 on project implementation;
- Country ownership of projects and programmes;
- Innovativeness in results areas (extent to which interventions may lead to paradigm shift towards low-emission and climate resilient development pathways);
- Replication and scalability the extent to which the activities can be scaled up in other locations within the country or replicated in other countries (this criterion, which is considered in document GCF/B.05/03 in the context of measuring performance could also be incorporate d in independent evaluations); and
- Unexpected results, both positive and negative.

INTERIM EVALUATION APPROACH & METHODOLOGY

The Interim Evaluation team must provide evidence-based information that is credible, reliable and useful. The team will review all relevant sources of information including documents prepared during the preparation phase (i.e. baseline Funding proposal submitted to the GCF, the Project Document, project reports including Annual Performance Reports, Quarterly Progress Reports, UNDP Environmental & Social Safeguard Policy, project budget revisions, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based review). The team will review the baseline Funding Proposal submitted to the GCF.

The Interim Evaluation team is expected to follow a collaborative and participatory approach¹⁴ ensuring close engagement with the Project Team, Implementing Partner, NDA focal point, government counterparts, the UNDP Country Office, UNDP-GEF Regional Technical Advisers, and other key stakeholders.

Engagement of stakeholders is vital to a successful Interim Evaluation. 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 Steering Committee, project stakeholders, local government, CSOs, project beneficiaries, etc. Additionally, the Interim Evaluation team is expected to conduct field missions to project sites in Mauritius, to be decided in consultation with the project team.

The final Interim Evaluation report should describe the full evaluation 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.

Owing to the travel restrictions since 18 March 2020, there is a possibility that the international consultant might not be able to reach the country for the evaluation. In this case, the evaluation team should develop a methodology that takes this into account the conduct of the evaluation virtually and remotely, including the use of remote interview methods and extended desk reviews, data analysis, surveys and evaluation questionnaires. This should be detailed in the Inception report and agreed with the Project team.

If all or part of the evaluation is to be carried out virtually then consideration should be taken for stakeholder availability, ability or willingness to be interviewed remotely. In addition, their accessibility to the internet/ computer may be an issue as many government and national counterparts may be working from home. These limitations must be reflected in the evaluation report.

UNDP Mauritius will be providing the necessary support in the implementation of remote/ virtual meetings and will provide the evaluation team with an updated stakeholder contact list.

If a data collection/field mission is not possible then remote interviews may be undertaken through telephone or online (skype, zoom etc.). International consultants can work remotely with national evaluator support in the field if it is safe for them to operate and travel. No stakeholders, consultants or UNDP staff should be put in harm's way and safety is the key priority.

A short validation mission may be considered if it is confirmed to be safe for staff, consultants, stakeholders and if such a mission is possible within the evaluation schedule. Equally, qualified and independent national consultants can be hired to undertake the evaluation and interviews in country as long as it is safe to do so.

DETAILED SCOPE OF THE INTERIM EVALUATION

The Interim Evaluation team will assess the following four categories of project progress.

¹⁴ For ideas on innovative and participatory Monitoring and Evaluation strategies and techniques, see <u>UNDP Discussion Paper</u>: <u>Innovations in Monitoring & Evaluating Results</u>, 05 Nov 2013.

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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.
- If there are major areas of concern, recommend areas for improvement.

Results Framework/Logframe:

- Undertake a critical analysis of the project's logframe indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Timebound), 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. Relevance, Effectiveness and Efficiency

- Were the context, problem, needs and priorities well analysed and reviewed during project initiation?
- Are the planned project objectives and outcomes relevant and realistic to the situation on the ground?
- Is the project Theory of Change (ToC) and intervention logic coherent and realistic? Does the ToC and intervention logic hold or does it need to be adjusted?
- Do outputs link to intended outcomes which link to broader paradigm shift objectives of the project?
- Are the planned inputs and strategies identified realistic, appropriate and adequate to achieve the results? Were they sequenced sufficiently to efficiently deliver the expected results?
- Are the outputs being achieved in a timely manner? Is this achievement supportive of the ToC and pathways identified?
- What and how much progress has been made towards achieving the overall outputs and outcomes of the project (including contributing factors and constraints)?
- To what extent is the project able to demonstrate changes against the baseline (assessment in approved Funding Proposal) for the GCF investment criteria (including contributing factors and constraints)?
- How realistic are the risks and assumptions of the project?

- How did the project deal with issues and risks in implementation?
- To what extent did the project's M&E data and mechanism(s) contribute to achieving project results?
- Have project resources been utilized in the most economical, effective and equitable ways possible (considering value for money; absorption rate; commitments versus disbursements and projected commitments; co-financing; etc.)?
- Are the project's governance mechanisms functioning efficiently?
- To what extent did the design of the project help or hinder achieving its own goals?
- Were there clear objectives, ToC and strategy? How were these used in performance management and progress reporting?
- Were there clear baselines indicators and/or benchmark for performance measurements? How were these used in project management? To what extent and how the project apply adaptive management?
- What, if any, alternative strategies would have been more effective in achieving the project objectives?

iii. 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 ¹⁵	Baseline Level ¹⁶	Midterm Target ¹⁷	End-of- project Target	Midterm Level & Assessme nt ¹⁸	Achiev ement Rating 19
SDG indicators	Indicator 13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities	0	1	1		

¹⁵ Populate with data from the Logframe and scorecards

¹⁶ Populate with data from the Project Document

¹⁷ If available

¹⁸ Colour code this column only

¹⁹ Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU
Project Strategy	Indicator ¹⁵	Baseline Level ¹⁶	Midterm Target ¹⁷	End-of- project Target	Midterm Level & Assessme nt ¹⁸	Achiev ement Rating ¹⁹
	Indicator 7.2.1: Renewable energy share in the total final energy consumption	7.22% (in 2011) ²⁰	15	35		
UNDP Strategic Plan Indicators	 Indicator 1.4.2: Number of countries with comprehensive measures - plans, strategies, policies, programmes and budgets implemented to achieve low- emission and climate-resilient development objectives 	0	1	1		
	2. # direct project beneficiaries.	252,178	353,052	441,315		
Fund level Impact: M1.0 Reduced emissions through increased low- emission energy access and power generation	Tonnes of carbon dioxide equivalent (tCO2eq) reduced or avoided as a result of Fund funded projects / programmes	0	24,240 (direct)	196,000 (direct) 484,800 (indirect)		
Project Outcome: M5.0 Strengthened institutional and regulatory systems	Institutional and regulatory systems that improve incentives for low- emission planning and development and their effective implementation	Renewabl e Energy Agency existing at Board level only (MAREN A)	Additional Legislation Enacted 10 Staff recruited	MARENA operational in 2019 MARENA staff fully trained		
Project	Proportion of low-emission power supply in a jurisdiction or market	20%	28%	35% in 2024		
Outcome: M6.0 Increased number of small, medium and large low-emission power suppliers	Number of households, and individuals (males and females) with improved access to low-emission energy sources	83,000 household s Males: 124,828 Females: 127,350	100,000 households Males: 174,760 Females: 178,292	129,500 households Males: 218,450 Females: 222,865		
PH	ASE ONE (2017-2019)	2017	2018	2019		

²⁰ Source: SDG Indicators Global Database, <u>http://unstats.un.org/sds/indicators/database</u>

Project Strategy	Indicator ¹⁵	Baseline	Midterm	End-of-	Midterm	Achiev
		Level ¹⁶	Target ¹⁷	project Target	Level & Assessme	ement Rating
					nt ¹⁸	19
Project Output: 1.1 Institutional strengthening of the Mauritius Renewable Energy Agency	Renewable Energy Agency Act in place Institution staffed by mid-term	Legislatio n voted No staff contracted	Supplement ary legislation – regulations and standards drafted 10 staff recruited, including at least 4 women	MARENA functioning as a fully- fledged agency 15 staff recruited, including at least 6 women		
Project Output: 2.1 Improving Grid Absorption Capacity to accept 185 MW intermittent RE	Software purchased Battery energy storage system procured	No AGC software installed No batteries Grid able to accept 60 MW	AGC software and batteries purchased and installed Grid able to accept 100 MW	All equipment installed and grid able to accept a total of 185 MW installed RE capacity		
PHASE TWO (2020-24)		2020	2022	2024		
Project Output: 2.2 Smart grid	Advanced Distribution Management system Smart Grid Strategy	No ADMS	ADMS partly installed Long-term smart grid strategy under preparation	ADMS completely installed Long-term smart grid strategy developed		
Project Output: 2.3 PV deployment	Actual MW installed by category (gender- disaggregated data)	5 MW PV under Phases 1, 2 and 3 of the SSDG 25 MW utility- scale PV on the grid	Additional 2 MW on grid from NGOs and 5 MW from households 5 MW from Public Buildings	4 MW capacity on grid from NGOs and 10 MW from households. 11 MW capacity installed on public buildings		

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Project Strategy	Indicator ¹⁵	Baseline Level ¹⁶	Midterm Target ¹⁷	End-of- project Target	Midterm Level & Assessme nt ¹⁸	Achiev ement Rating ¹⁹
			65 MW PV utility-scale	130 MW utility-scale renewable energy		
Project Output: 3.1 PV mini-grids on the outer island of Agalega	Capacity of PV systems installed Number of OIDC staff trained	Existing systems are not functional No one trained	300 kW PV systems fully operational 3 females and 5 males trained	300 kW PV systems remain fully operational		

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:

- Identify remaining barriers to achieving the project objective in the remainder of the project.
- Assess impact of Covid-19 on project and recommend budget reallocation
- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.

iv. 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 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 cofinancing: 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?

Coherence in climate finance delivery with other multilateral entities

- Who are the partners of the project and how strategic are they in terms of capacities and commitment?
- Is there coherence and complementarity by the project with other actors for local other climate change interventions?
- To what extent has the project complimented other on-going local level initiatives (by stakeholders, donors, governments) on climate change adaptation or mitigation efforts?
- How has the project contributed to achieving stronger and more coherent integration of shift to low emission sustainable development pathways and/or increased climate resilient sustainable development (GCF RMF/PMF Paradigm Shift objectives)? Please provide concrete examples and make specific suggestions on how to enhance these roles going forward.

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 GCF reporting requirements (i.e. how have they addressed poorly-rated APRs, if applicable?)
- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

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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.

v. Sustainability

- Validate whether the risks identified in the Project Document, APRs 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 GCF 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?

vi. Country Ownership

• To what extent is the project aligned with national development plans, national plans of action on climate change, or sub-national policy as well as projects and priorities of the national partners?

- How well is country ownership reflected in the project governance, coordination and consultation mechanisms or other consultations?
- To what extent are country level systems for project management or M&E utilized in the project?
- What level and types of involvement for all Is the project as implemented responsive to local challenges and relevant/appropriate/strategic in relation to SDG indicators, National indicators, GCF RMF/PMF indicators, AE indicators, or other goals?
- Were the modes of deliveries of the outputs appropriate to build essential/necessary capacities, promote national ownership and ensure sustainability of the result achieved?

vii. Gender equity

- Does the project only rely on sex-disaggregated data per population statistics?
- Are financial resources/project activities explicitly allocated to enable women to benefit from project interventions?
- Does the project account in activities and planning for local gender dynamics and how project interventions affect women as beneficiaries?
- Do women as beneficiaries know their rights and/or benefits from project activities/interventions?
- How do the results for women compare to those for men?
- Is the decision-making process transparent and inclusive of both women and men?
- To what extent are female stakeholders or beneficiaries satisfied with the project gender equality results?
- Did the project sufficiently address cross cutting issues including gender?

viii. Innovativeness in results areas

• What role has the project played in the provision of "thought leadership," "innovation," or "unlocked additional climate finance" for climate change adaptation/mitigation in the project and country context? Please provide concrete examples and make specific suggestions on how to enhance these roles going forward.

ix. Unexpected results, both positive and negative

- What has been the project's ability to adapt and evolve based on continuous lessons learned and the changing development landscape? Please account for factors both within the AE/EE and external.
- Can any unintended or unexpected positive or negative effects be observed as a consequence of the project's interventions?
- What factors have contributed to the unintended outcomes, outputs, activities, results?

x. Replication and Scalability

- What are project lessons learned, failures/lost opportunities to date? What might have been done better or differently?
- How effective were the exit strategies and approaches to phase out assistance provided by the project including contributing factors and constraints
- What factors of the project achievements are contingent on specific local context or enabling environment factors?
- Are the actions and results from project interventions likely to be sustained, ideally through ownership by the local partners and stakeholders?

• What are the key factors that will require attention in order to improve prospects of sustainability, scalability or replication of project outcomes/outputs/results?

Conclusions & Recommendations

The Interim Evaluation team will include a section of the report setting out the evaluation's evidencebased 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.

The Interim Evaluation team should make no more than 15 recommendations total.

Ratings

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

Measure	Rating	Achievement Description
Project Strategy	N/A	
Progress Towards	Objective Achievement	
Results	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	(rate 6 pt. scale)	
Implementation &		
Adaptive		
Management		
Sustainability	(rate 4 pt. scale)	

Table. Interim Evaluation Ratings & Achievement Summary Table for GCF funded project – 'Accelerating the transformational shift to a low carbon economy in the Republic of Mauritius'10

TIMEFRAME

The total duration of the Interim Evaluation will be approximately 25 working days over a time period of *10* weeks, and shall not exceed three months from when the consultant(s) are hired. The tentative Interim Evaluation timeframe is as follows:

ACTIVITY	NUMBER OF	COMPLETION
	WORKING DAYS	DATE
Document review and preparing Interim Evaluation	5 days	(date)
Inception Report (Inception Report due no later than 2		
weeks before the evaluation mission)		

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Interim Evaluation mission: stakeholder meetings,	6 days	(date)
interviews, field visits		
Presentation of initial findings- last day of the Interim	1 day	(date)
Evaluation mission		
Preparing draft report (due within 3 weeks of the Interim	7 days	(date)
Evaluation mission)		
Finalization of Interim Evaluation report/ Incorporating	6 days	(date)
audit trail from feedback on draft report (due within 1		
week of receiving UNDP comments on the draft) (note:		
accommodate time delay in dates for circulation and		
review of the draft report)		

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

MIDTERM REVIEW DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	Interim	Interim Evaluation team	No later than 2	Interim Evaluation
	Evaluation	clarifies objectives and	weeks before the	team submits to the
	Inception Report	methods of the	evaluation mission	Commissioning Unit
		evaluation		and project
				management
2	Draft Interim	Full report (using	Within 3 weeks of	Sent to the
	Evaluation	guidelines on content	the evaluation	Commissioning Unit,
	Report	outlined in Annex B)	mission	reviewed by RTA,
		with annexes		Project Coordinating
				Unit, NDA focal point
5	Final Interim	Revised report with audit	Within 1 week of	Sent to the
	Evaluation	trail detailing how all	receiving UNDP	Commissioning Unit
	Report*	received comments have	comments on draft	
		(and have not) been		
		addressed in the final		
		report		

*The final Interim Evaluation report must be in English. If applicable, the Commissioning Unit may choose to arrange for a translation of the report into a language more widely shared by national stakeholders.

In line with the UNDP's financial regulations, when determined by the Country Office and/or the consultant that a deliverable or service cannot be satisfactorily completed due to the impact of COVID-19 and limitations to the evaluation, that deliverable or service will not be paid.

Due to the current COVID-19 situation and its implications, a partial payment may be considered if the consultant invested time towards the deliverable but was unable to complete to circumstances beyond his/her control.

INTERIM EVALUATION ARRANGEMENTS

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The principal responsibility for managing this Interim Evaluation resides with the Commissioning Unit. The Commissioning Unit for this project's Interim Evaluation is the UNDP Country Office and the Implementing Partner.

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

TEAM COMPOSITION

A team of *two independent consultants* will conduct the Interim Evaluation - one team leader (with experience and exposure to projects and evaluations in other regions globally) and one team expert (National consultant), usually from the country of the project. 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: *Technical Criteria - 70% of total evaluation – max. 70 points*:

Experience

- Recent experience with result-based management evaluation methodologies (10 points);
- Experience applying SMART indicators and reconstructing or validating baseline scenarios (10 points);
- Competence in adaptive management, as applied to climate change mitigation or environmental projects (10 points);
- Experience working with GCF, GEF or other donors funded project and experience with UNDP procedures (10 points);
- Work experience in relevant technical areas for at least 5 years (10 points);
- Demonstrable analytical skills and understanding of issues related to gender; experience in gender sensitive evaluation and analysis (10 point).
- Excellent communication skills (5 points);
- Project evaluation/review experiences within United Nations system will be considered an asset (10 Points);

Education and Language

- A Bachelor's degree in Electrical engineering, Energy Economics, Renewable Energy, Management, or other closely related field (15 points).
- Fluency in written and spoken English; Excellent communication skills in English; (10 points)

Financial Criteria - 30% of total evaluation – max. 30 points:

EVALUATOR ETHICS

The Interim Evaluation team will be held to the highest ethical standards and is required to sign a code of conduct upon acceptance of the assignment. This MTR will be conducted in accordance with the principles outlined in the <u>UNEG 'Ethical Guidelines for Evaluations'</u>. The Interim Evaluation team must safeguard the rights and confidentiality of information providers, interviewees and stakeholders through measures to ensure compliance

with legal and other relevant codes governing collection of data and reporting on data. The Interim Evaluation team must also ensure security of collected information before and after the Interim Evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information, knowledge and data gathered in the Interim Evaluation process must also be solely used for the Interim Evaluation and not for other uses without the express authorization of UNDP and partners.

PAYMENT MODALITIES AND SPECIFICATIONS

20% of payment upon approval of the final Interim Evaluation Inception Report50% upon submission of the draft Interim Evaluation report30% upon finalization of the Interim Evaluation report

APPLICATION PROCESS²¹

Recommended Presentation of Proposal:

- a) Letter of Confirmation of Interest and Availability using the <u>template²²</u> provided by UNDP;
- b) **CV** and a **Personal History Form** (<u>P11 form</u>²³);
- c) **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)
- d) 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.

All application materials should be submitted to the address United Nations Development Programme, 6th Floor, Anglo House Mauritius, Intendence street, Port Louis, Mauritius in a sealed envelope indicating the following reference "Consultant for the GCF funded project titled - 'Accelerating the transformational shift to a low carbon economy in the Republic of Mauritius - Midterm Review" or by email at the following address ONLY: procurement.mu@undp.org by 16:00 hrs on 30 June 2020 Incomplete applications will be excluded from further consideration.

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.

²¹ Engagement of the consultants should be done in line with guidelines for hiring consultants in the POPP: <u>https://info.undp.org/global/popp/Pages/default.aspx</u>

https://intranet.undp.org/unit/bom/pso/Support%20documents%20on%20IC%20Guidelines/Template%20for%20Confirmat ion%20of%20Interest%20and%20Submission%20of%20Financial%20Proposal.docx

²³ http://www.undp.org/content/dam/undp/library/corporate/Careers/P11 Personal history form.doc

Annex 2: List of respondents

Tuesday, 13 December 2022 - FIELD VISITS						
09:30 - 11:30 Face-to-face	CEB Jin Fei for the 4 MW BESS	Sameer Khodabacus				
12:15 - 14:00 Face-to-face	CEB Curepipe for the AGC 404 2000	Mr Rao Appadu Mr Damodar Doseeah				
		Mr. Sajjid Mooniaruck	Project Manager, Component 2 <u>sajjid.mooniar</u> <u>uck@undp.org</u>			
		Ms. Anshinee Ramana	GCF Project Coordinator <u>anshineeraman</u> <u>a@gmail.com</u>			
Wednesday, 14 December 2022						
09:30 - 10:30 Online	M/FPED	Ms. Namrata Jory	Analyst/Senior Analyst njory@govmu.org			
10:30 - 11:30 Online	NEF: Tel: (+230) 405 5170 Ext : 5159 Fax: (230) 211 1350	Mr Ajmal Lotun	Project Manager (Civil Engineering) <u>alotun@nef.mu</u>			
11:30 - 12:30 Online	URA Tel: (+230) 454 8070/454 8079 Fax: (+230) 489 2796	Mr Ilshad Hoolash	Ag. Manager Network Assets <u>ihoolash@ura</u> <u>mauritius.mu</u>			
Thursday, 15 December	2022					
09.00- 10.00 Online	Ministry of Energy and Public Utilities 206 8070	Mr. D. Jahajeea Ms. Nirkita Seeburn	Project Director / Director Technical Services (Public Utilities) jahajd71@gmail.com Engineer/ Senior Engineer <u>nseeburn@gov</u>			
11:00 - 12:00 Online	UNDP	Ms Jana Koperniech	RTA jana.koperniech@undp .org			

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13.00 - 14.00 Online	UOM	Dr. Yatin Ramgolam	Senior Lecturer <u>y.ramgolam@</u> uom.ac.mu
14.00-14.30 online	UNDP	Ms. Amanda Kabejja Serumaga	Resident Representative
15.00-16.00 Online	Ministry of Gender Equality and Family Welfare (National Women's Council)	Ms. Tapsee Mowshimee	<u>mtapseenwc@gmail.co</u> <u>m</u>
16.00-17.00 Online	AFD	Mr Johan Letang	Chargé de mission Energie et Biodiversité <u>letangj@afd.fr</u>
Friday, 16 December 20	22		
09.30 - 11.30 Face-to-face	CEB 404 2000	Mr. Chavan Dabeedin	Project Director, Component 2 <u>chavan.dabeed</u> <u>in@ceb.intnet.mu</u>
		Mr. Ally Rujbally	Senior Engineer <u>ally.rujbally@ceb.intn</u> <u>et.mu</u>
12.00-13.00 online	Business Mauritius 4663600	Amandine Derosnay	Head of Sustainability and Inclusive Growth <u>a.derosnay@business</u> <u>mauritius.org</u>
		Vimal Motee	v.motee@businessmau ritius.org
14.00-15.00 online	UNDP	Daniel Omodo- McMondo	Head of Environment & Project Manager <u>daniel.omodo@undp.o</u> rg;
Tuesday 20 December 2	022		
13.00-14.00 online	Ministry of Environment, Solid Waste Management and Climate Change	Ms. Aisha Buchoo- Golamaully	Environment Officer abuchoo@govmu.org
16.00 - 17.00 online	DBM 203 3600/52557915	Mr. Jaywant Pandoo	Managing Director jpandoo@dbm.mu
		Mr. Devanand	Acting Manager

		Gungaram D Bhagirutty D Bhiwajee	dgungaram@d bm.mu
Wednesday 21 Decembe	er 2022		
11:30-02:30 online	Ministry of Gender Equality and Family Welfare (National Women's Council)	Mrs Bhavisha Balgobin Mrs Shenaz Bibi Sooba Mrs. Hansnee Jhuree Medor	Programme Coordinator <u>pc.balgobin@gmail.co</u> <u>m</u> <u>shenazsooba@gmail.c</u> <u>om</u> 57695565; <u>Hansnee19@g</u> <u>mail.com</u>
January 6, 2023 - FIELD	O VISITS		
10:00-12:00 Face-to-face	True Tesla Technologies Laventure Skytrails (via CEB)		

Annex 3 : IE Evaluative Matrix

Interim Evaluation evaluative matrix (evaluation criteria with key questions, indicators, sources of data, and methodology)

Evaluative Questions	Indicators	Sources	Methodology			
1. Project Strategy: To what extent is the project strategy relevant to country priorities, country ownership, and the best route towards expected results?						
Design						
Is the project strategy relevant to the country priorities and aligned with development priorities?	Degree of coherence between the project and national priorities Appreciation from national stakeholders with respect to adequacy of project design and implementation to national realities	Project documents; national policies and strategies; key project partners	 Document review Interviews with UNDP and project team Interviews with key stakeholders 			
Has the country taken full ownership?	Level of involvement of government officials and other partners in the project design and implementation. Project Board meetings, replication of activities, budget lines reserved for project continuation.	Minutes, project documents, project staff and partners, budget speeches, websites	 Document review Interviews with UNDP and project team Interviews with key stakeholders 			
Is the project internally coherent in its design? Are there logical linkages between expected results of the project (log frame) and the project design(in terms of project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources, etc.)? Is the length of the project sufficient to achieve Project Outcomes?	Level of coherence between project expected results and project design internal logic	Project documents, key project stakeholders	 Document review Interviews with UNDP and project team Interviews with key stakeholders 			
Were planned monitoring and evaluation arrangements adequate?	M&E Plan use, need for change/adjustment of M&E	M&E plan, reports, staff	 Document review Interviews with UNDP and project team Interviews and meetings with key stakeholders 			
Results Framework/Logframe						
Are the indicators and targets SMART and are	Logframe indicators and targets	Project reports, M&E	 Document Analyses Interviews with UNDP and project team 			

amendments/revisions needed?					
Are the objectives and outcomes clear and realistic? Are revisions needed?	Logframe objectives/outcomes	Project reports, M&E	 Document Analyses Interviews with UNDP and project team 		
2. Progress Towards Resproject been achieved th	sults: To what extent have us far?	the expected outcomes a	nd objectives of the		
To what extent progresses towards outputs or outcomes have been achieved?	See indicators in project document results framework and log frame.	Project Documents, M&E reports, project team and relevant stakeholders.	 Document review Interviews with UNDP and project team Interviews with key stakeholders Field visits 		
How is the ToC applied through the project?					
What are the remaining barriers to achieving the project objectives in the remainder of the project?	Description of specific challenges/barriers/constrai nts	Project reports, risk table/assessment, interviews	 Document Analyses Interviews with UNDP and project team 		
Early signs of successful interventions?	Replication/adoption of approaches, methodologies, collaboration efforts etc.	Project reports, interviews	 Document Analyses Interviews with UNDP and project team 		
Are other strategies possible to achieve expected results? BAU?	Other projects/partners/initiatives	Project documents			
Inclusive gender approach?	UNDP Gender Marker, disaggregated beneficiaries/participants	Project reports, interviews	 Document Analyses Interviews with UNDP and project team 		
3.Project Implementation and Adaptive Management: Has the project been implemented efficiently, cost-effectively, and been able to adapt to any changing conditions thus far? To what extent are project-level monitoring and evaluation systems, reporting, and project communications supporting the project's implementation?					
Is the Project's governance effective?	Is the governance structure well designed? Do governance bodies (PB) function well?	Minutes, reports. • Interviews with UNDP and project team • Interviews with key stakeholders	• Document review		
Is the project well designed?	Does the project logical framework allow for good project management?	Logframe	 Document Analyses Interviews with UNDP and project team 		
	Has the programme been able to adapt successfully to changing circumstances?	Interviews	 Document Analyses Interviews with UNDP and project team 		

Was project support by UNDP provided in an efficient way?	Availability and quality of financial and progress reports Timeliness and adequacy of reporting provided	Project documents, UNDP project team	 Document review Interviews with UNDP and project team Interviews with key stakeholders
Is the quality of the outputs sufficient?	Stakeholders perception of the quality of outputs		 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/partners
	Quality of expertise involved	CV of main experts	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/partners
Work Planning			
Are work plans and implementation timely and of good quality?	Stakeholders perception, AWP-Bs review, timely delivery	Reports	 Document review Interviews with UNDP and project team Interviews with key stakeholders
Is work planning participatory?	Participation of stakeholders Gender sensitive	Reports	 Document review Interviews with UNDP and project team Interviews with key stakeholders
Finance and co-finance			
Is the project able to spend its budget on-time?	Rate of delivery against approved budget; evolution over time (Y to Y)	M&E reports	 Document Analyses Interviews with UNDP and project team
Are interventions cost- effective?	Procurement options for cost-effectiveness; Stakeholder perception.	Reports	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/partners
Co-finance use/expenditure?	Co-financing table, reporting by co-financing partners, actual versus planned.	Reports	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/ partners
Is financial management effective?	Fund flow issues, audit objections etc.	Audit reports, project reports	 Document Analyses Interviews with UNDP and project team
Coherence in climate finance delivery with other multilateral entities			

Is there coherence and complementarity with other local climate change interventions?	Degree to which project is coherent and complementary to another donor programming nationally and regionally	Documents from other donor supported activities, other donor representatives, project documents	 Document review Interviews with UNDP and project team Interviews with relevant stakeholders
How has the project contributed to achieving stronger and more coherent integration of shifts to climate resilient sustainable development?		Project Documents	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/ partners Project-level M&E Systems
Is the M&E system functioning and effective?	Are results well monitored and evaluated in terms of activities, outputs and outcomes?	M&E reports;Minutes	 Document Analyses Interviews with UNDP and project team
How is M&E information used?	Partners involvement, management decisions, M&E missions-field visits?	Reports, Minutes	 Document Analyses Interviews with UNDP and project team
Stakeholder engagement			
Has the project developed appropriate partnerships with key stakeholders?	Stakeholder perception, stakeholder engagement plan.	Reports	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/ partners
Are stakeholders engaged and involved in planning and decision-making?	Stakeholder perception, reports	Reports	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/ partners
Social and Environmental (Sa	(feguards)		
Are the risks identified in the project's most current SESP valid?	Completeness of risk identification and assumptions during project planning and design Quality of existing information systems in place to identify emerging risks and other issues	Project Documents, Project team and relevant stakeholders,	 Document review Interviews with UNDP and project team Interviews with key stakeholders
What progress has been made in the implementation of the project's social and environmental measures as outlined in the SESP submitted at the Funding proposal stage?			
Reporting			

Has the Project produced timely and quality reports?	Stakeholder perception, QA of UNDP-RTAs	Quarterly, annual reports, GCF reports etc.	 Document Analyses Interviews with UNDP and project team 	
Communications				
Is internal project communication with stakeholders regular and effective?	Stakeholder perception,	Reports	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/ partners 	
How does the project reach the general public?	Social media, web site, brochures, video's, newspapers, manuals etc.	Reports, websites	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/ partners 	
4. Sustainability: To what environmental risks to such as the second sec	at extent are there financia ustaining long-term projec	al, institutional, socio-eco ct results?	nomic, and/or	
Are the risks identified in the Project Document still valid? Have they changed over time?	Risk Table, changes?	Reports	 Document Analyses Interviews with UNDP and project team 	
How have these risks affected the Project? How have they been mitigated?	Delays, failure, strategy changes etc.	Reports	 Document Analyses Interviews with UNDP and project team 	
Availability of resources Post-Phase 1?	Budgets internalized in the government budget (e.g. O&M budget, training, staffing etc.)	Reports, Websites	 Document Analyses Interviews with UNDP and project team Interviews of stakeholders/ partners 	
Technical knowledge and human resource capacity enhanced? Was an appropriate balance struck between utilization of international expertise as well as local capacity?	Staffing, budget, built awareness, knowledge, curriculum developed.	Project Documenta UNDP Beneficiaries	 Document review Interviews with UNDP and project team Interviews with key stakeholders 	
4.1 Replication and Scalability				
What are key factors to facilitate scalability and replication of project outcomes/outputs/results?	Budgets earmarked, documentation of emerging best practices, capacity developed etc.	Data collected throughout evaluation	 Document review Interviews with UNDP and project team Interviews with key stakeholders 	
4.2 Country Ownership				
Alignment with national plans and priorities, involvement in project implementation/governance and consultations?	Internalization in national plans, policies, guidelines, national M&E indicators, O+M budget allocation	Reports	 Document review Interviews with UNDP and project team Interviews with key stakeholders 	

Alignment with national (M&E) indicators?			
5. Cross-cutting issues			
Gender Equity			
Is gender equity actively pursued?	Inclusiveness of planning, consultations, implementation and monitoring	Reports, gender action plan	 Document review Interviews with UNDP and project team Interviews with key stakeholders
Innovations			
Concrete examples of thought leadership, innovation or unlocked additional climate finance? What innovations or emerging best practices are scalable?	Case studies, budgets mobilized, documentation	Reports, social media reports	 Document review Interviews with UNDP and project team Interviews with key stakeholders
Unexpected Results			
What unexpected results (positive and negative) have emerged?	Case studies, documentation.	Reports, social media reports	 Document review Interviews with UNDP and project team Interviews with key stakeholders

Annex 4: Interview Guide for data collection

A: Data collection protocol for UNDP Team and Ministry of Finance, Economic Planning and Development

i. Project Design, Logframe and Theory of Change

Project design:

- As far as you are aware, have there been any changes in the context which have had a bearing on the way this project was initially designed?
- Thinking about the project now, are there any things you could have designed differently knowing what you know now?
- Give any examples of instances that make you believe or not believe that there is country ownership of this project.
- How would you strengthen this ownership?

Results Framework/Logframe and Theory of Change:

- At midpoint, is there any emerging evidence that the project is leading to increased income generation, gender equality and women's empowerment, improved governance, etc.) or likely to be achieved by end of project?
- If not, what are the constraining factors?

ii. Relevance, Effectiveness and Efficiency

Relevance

- How appropriate was the project design in delivering the intended results of the project?
- Were the context, problem, needs and priorities well analyzed and reviewed during project initiation?
- Did the project design facilitate or hinder the achievement of results? If so, what aspects?
- Are the planned project objectives and outcomes relevant and realistic to the situation on the ground?
- Are there any other ways, in your opinion, through which the project design would have been more effective?

Effectiveness

- Are the planned inputs and strategies identified realistic, appropriate and adequate to achieve the results?
- Are the outputs being achieved in a timely manner?
- Were baseline indicators expressed in a clear manner?

- What have been the facilitating factors?
- What have been the main constraints?
- Thinking about the remaining part of the project, which risks are you most concerned about which could stop the project from achieving the goals?
- What steps has the project taken to adapt to the evolving project context and risks?
- How is the project team using the TOC and logframe for project implementation?

Efficiency

- Are the outputs being achieved in a timely manner?
- To what extent did the project's M&E data and mechanism(s) contribute to achieving project results?
- To what extent would you say project resources were utilized in the most effective manner?
- Are the project's governance mechanisms functioning efficiently?
- What, if any, alternative strategies would have been more effective in achieving the project objectives?

iii. Progress Towards Results

Progress Towards Outcomes and Outputs Analysis:

- Thinking about the project now, what achievements are you the proudest about?
- How can these successes be further scaled up?
- Which activities have been more challenging and why?
- What actions has the project undertaken to address those challenges
- Identify remaining barriers to achieving the project objective in the remainder of the project.
- Did the Covid 19 pandemic affect the project in anyway? If so how, and what actions did the project undertake to mitigate the impacts.

iv. Project Implementation and Adaptive Management

Management Arrangements:

- How would you assess the current project management? Have any changes been introduced since start of the project?
- Is the team sufficiently staffed in quantity and quality of staff?
- Thinking about the role of the Ministry of Finance, Economic Planning and Development, how do you assess their performance so far? What could they do differently?
- What about the support role of UNDP? What are their strong points? What could they do differently?

Work Planning:

• Have there been any delays in implementation since kick off and why?

- How have these issues been resolved?
- Are there any outstanding ones and why?
- Would you say the project planning is results based?
- Please explain how the project's theory of change and log frame is used in planning and monitoring of activities
- Based on your understanding of progress so far, how convinced are you that all project activities will be implemented before the end of project.
- Do you think an extension is necessary?

Financing and Co-financing:

- Please explain how the financial management system of the project works including the systems of control, accountability and transparency?
- Have there been any budget revisions? When did these occur and was GCF approval obtained?
- Have GCF payments been received on time?
- What about the materialization of co-financing from the government?
- Explain how availability or not of required project financing is impacting project delivery and achievement of results?
- What measures have been introduced to address any shortcomings in the flow of funds?

Coherence in climate finance delivery with other multilateral entities

- Who are the partners of the project and how strategic are they in terms of capacities and commitment?
- Is there coherence and complementarity by the project with other actors for local other climate change interventions?
- To what extent has the project complemented other on-going local level initiatives (by stakeholders, donors, governments) on climate change adaptation or mitigation efforts?
- How has the project contributed to achieving stronger and more coherent integration of shifts to low emission sustainable development pathways and/or increased climate resilient sustainable development (GCF RMF/PMF Paradigm Shift objectives)? Please provide concrete examples and make specific suggestions on how to enhance these roles going forward.

Project-level Monitoring and Evaluation Systems:

- Kindly explain the implementation of the project M&E system?
- What tools are used to collect, analyse and track progress?
- Which stakeholders are involved?
- How is the information generated being used in the project give some examples
- Is project reporting and information generated by the project linked to national SDGs, and other national reporting systems?
- In your view is the M&E system sufficiently budgeted for and staffed?

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?
- Is a grievance mechanism in place? If so, assess its effectiveness.

Social and Environmental Standards (Safeguards)

- Has there been any changes to the risk profile of the project since approval?
- If yes, what were the new risks identified, when and what mitigation measures have been introduced.

Reporting:

- How would you assess the timeliness and quality of reports to GCF?
- Have you received any feedback from GCF on these issues?
- What mechanisms are in place to document and share lessons emerging from this project?
- Have any lesson learning events been organised as part of this project and what was the response from stakeholder
- Are there any concerns about the reporting timelines and requirements?

Communications:

- Does the project have a communication and outreach strategy?
- What outreach activities have been carried out so far? What were the objectives and targets?
- How would you assess internal communication within implementing and executing agencies? Would you consider it as being transparent and inclusive?

v. Sustainability

• How confident are you that the achievements so far could continue even after the project ends?

Financial risks to sustainability:

- Do you have any concerns about the availability of financial resources to ensure the continuity of project gains?
- Are there any financial risks to the project?

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?
- How would you assess stakeholders' interest for the continuity of this project?

- Have public awareness events been organized and what have been the responses?
- 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?
- What systems are in place to ensure accountability, transparency, and technical knowledge transfer in this project.

Environmental risks to sustainability:

• Are there any environmental risks that may jeopardize sustainability of project outcomes?

vi. Country Ownership

- How well is country ownership reflected in the project governance, coordination and consultation mechanisms or other consultations?
- To what extent are country level systems for project management or M&E utilized in the project?
- How well do the project activities align with national development plans, national plans on climate change or sub-national policy and priorities of its national partners?

vii. Gender equity

- Are financial resources/project activities explicitly allocated to enable women to benefit from project interventions?
- Does the project account for activities and planning for local gender dynamics and how project interventions affect women as beneficiaries?
- Do women as beneficiaries know their rights and/or benefits from project activities/interventions?
- How do the results for women compare to those for men?
- Is the decision-making process transparent and inclusive of both women and men?
- To what extent are female stakeholders or beneficiaries satisfied with the project gender equality results?
- Did the project sufficiently address cross cutting issues including gender in the project reporting?
- How does the project incorporate gender in its governance or staffing?

viii. Innovativeness in results areas

• What are the lessons learned to enrich learning and knowledge generation in terms of how the project played in the provision of "thought leadership," "innovation," or "unlocked additional climate finance" for climate change adaptation/mitigation in the project and country context? Please provide concrete examples and make specific suggestions on how to enhance these roles going forward.

ix. Unexpected results, both positive and negative

- What has been the project's ability to adapt and evolve based on continuous lessons learned and the changing development landscape? Please account for factors both within the AE/EE and external.
- Can any unintended or unexpected positive or negative effects be observed as a consequence of the project's interventions?
- What factors have contributed to the unintended outcomes, outputs, activities, results?
- Do any of the unintended results constitute a major change?

x. Replication and Scalability

- What are project lessons learned, failures/lost opportunities to date? What might have been done better or differently?
- Assess the effectiveness of exit strategies and approaches to phase out assistance provided by the project including contributing factors and constraints? Is there a need for recalibration?
- What factors of the project achievements are contingent on specific local context or enabling environment factors?
- Are the actions and results from project interventions likely to be sustained, ideally through ownership by the local partners and stakeholders?
- What are the key factors that will require attention in order to improve prospects of sustainability, scalability or replication of project outcomes/outputs/results?

B: Evaluation tool for other national stakeholders

Project design:

- As far as you are aware, has there been any changes in the context which have had a bearing on the way this project was initially designed?
- Thinking about the project now, are there any things you could have designed differently knowing what you know now?
- Give any examples of instances that make you believe or not believe that there is country ownership of this project.
- How would you strengthen this ownership?

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ii. Relevance, Effectiveness and Efficiency

Relevance

- How appropriate was the project design in delivering the intended results of the project?
- Were the context, problem, needs and priorities well analyzed and reviewed during project initiation?
- Are there any other ways, in your opinion, through which the project design would have been more effective?

Effectiveness

- What has been the facilitating factors?
- What have been the main constraints?
- Thinking about the remaining part of the project, which risks are you most concerned about which could stop the project from achieving the goals?
- What steps has the project taken to adapt to the evolving project context and risks?

Efficiency

- Are the outputs being achieved in a timely manner?
- What, if any, alternative strategies would have been more effective in achieving the project objectives?

iii. Progress Towards Results

Progress Towards Outcomes and Outputs Analysis:

- Thinking about the project now, what achievements are you the proudest about?
- How can these successes be further scaled up?
- Which activities have been more challenging and why?
- What actions has the project undertaken to address those challenges
- Identify remaining barriers to achieving the project objective in the remainder of the project.
- Did the Covid 19 pandemic affect the project in any way? If so, how, and what actions did the project undertake to mitigate the impacts.

iv. Project Implementation and Adaptive Management

Management Arrangements:

- How would you assess the current project management? Have any changes been introduced since the start of the project?
- What about the support role of UNDP? What are their strong points? What could they do differently?

Work Planning:

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- Have there been any delays in implementation since kick off and why?
- How have these issues been resolved?
- Are there any outstanding ones and why?
- Based on your understanding of progress so far, how convinced are you that all project activities will be implemented before the end of project.
- Do you think an extension is necessary?

Financing and Co-financing:

• Did your government commit to co-financing? If yes, what is the level of materialization of co-financing from the government?

Coherence in climate finance delivery with other multilateral entities

- Is there coherence and complementarity by the project with other actors for local other climate change interventions?
- To what extent has the project complemented other on-going local level initiatives (by stakeholders, donors, governments) on climate change adaptation or mitigation efforts?

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?

Reporting:

- How would you assess the timeliness and quality of reports to GCF?
- Have you received any feedback from GCF on these issues?
- What mechanisms are in place to document and share lessons emerging from this project?
- Have any lesson learning events been organised as part of this project and what was the response from stakeholder

Communications:

- Does the project have a communication and outreach strategy?
- How would you assess internal communication within implementing and executing agencies? Would you consider it as being transparent and inclusive?

v. Sustainability

• How confident are you that the achievements so far could continue even after the project ends?

Financial risks to sustainability:

- Do you have any concerns about the availability of financial resources to ensure the continuity of project gains.
- Are there any financial risks to the project?

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?
- How would you assess stakeholders' interest for the continuity of this project?

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?
- What systems are in place to ensure accountability, transparency, and technical knowledge transfer in this project.

Environmental risks to sustainability:

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

vi. Country Ownership

- How well is country ownership reflected in the project governance, coordination and consultation mechanisms or other consultations?
- How well do the project activities align with national development plans, national plans on climate change or sub-national policy and priorities of its national partners?

vii. Gender equity

- Are financial resources/project activities explicitly allocated to enable women to benefit from project interventions?
- Does the project take into account activities and planning for local gender dynamics and how project interventions affect women as beneficiaries?

viii. Innovativeness in results areas

• What are the lessons learned to enrich learning and knowledge generation in terms of how the project played in the provision of "thought leadership," "innovation," or "unlocked additional climate finance" for climate change adaptation/mitigation in the project and country context? Please provide concrete examples and make specific suggestions on how to enhance these roles going forward.

ix. Unexpected results, both positive and negative

- What has been the project's ability to adapt and evolve based on continuous lessons learned and the changing development landscape? Please account for factors both within the AE/EE and external.
- Can any unintended or unexpected positive or negative effects be observed as a consequence of the project's interventions?
- What factors have contributed to the unintended outcomes, outputs, activities, results?
- Do any of the unintended results constitute a major change?

x. Replication and Scalability

- What are project lessons learned, failures/lost opportunities to date? What might have been done better or differently?
- Are the actions and results from project interventions likely to be sustained, ideally through ownership by the local partners and stakeholders?
- What are the key factors that will require attention in order to improve prospects of sustainability, scalability or replication of project outcomes/outputs/results?

Annex 5: List of documents reviewed

Non-Technical Reports

- 1. Funding Proposal
- 2. Funded Activity Agreement (FAA)
- 3. UNDP Project Document
- 4. UNDP Environmental and Social Screening results
- 5. Project Inception Report
- 6. All Annual Performance Reports (APRs)
- 7. Progress reports and work plans of the various implementation task teams
- 8. Audit reports
- 9. Mission reports
- 10. All monitoring reports prepared by the project
- 11. Financial and Administration guidelines used by Project Team
- 12. Draft Inception Workshop Report December 2022 UNDP

Technical Reports and other Publications

- Report on assessment of potential of floating solar PV on lakes and reservoirs in Mauritius
- Preliminary report on capacity needs assessment in floating solar PV and training materials/training report
- Report on assessment of potential of solar PV at Tamarind Falls, taking into consideration, but not limited to, technical, environmental, social, economic and financial aspects
- Policy recommendations for streamlining floating solar PV in local legislation
- Bathymetry report Tamarind Falls reservoir
- National Grid Code Report
- Consultative workshop on national grid code
- Institutional Mapping of Electricity Sector in Mauritius
- Guidelines, Norms, Standards and Institutional Requirements for Implementation
- Development Project Evaluation Tool
- Consultative Workshop Funding Strategies
- Consultative Workshop Incentive Scheme
- Electricity Tariff Guidelines and Methodology
- Standards for Accreditation of installers, technicians and professionals of the RETs
- Incentive Scheme for Deployment of RE (FINAL)
- Funding Strategies and Schemes for Accelerating RE Transition (FINAL)
- Framework for Green Jobs in the RE Sector
- Detailed design report (MARENA)
- Detailed design report (URA)
- Completion of procurement (MARENA)
- Completion of procurement (URA)
- Report on supervision, installation and commissioning of MIS (MARENA)
- Report on supervision, installation and commissioning of MIS (URA)
- Operationalisation of the MIS (MARENA)

- Operationalisation of the MIS (URA)
- Operation and maintenance manual (MARENA)
- Operation and maintenance manual (URA)
- Training plan and training completion report (MARENA)
- Training plan and training completion report (URA)
- Completion of assignment (MARENA)
- Completion of assignment (URA)
- Marshall Plan Against Poverty, March 2016
- Systematic country diagnostics, Report No. 92703-MU, World Bank, 2015
- Vision 2030, Speech of the Prime Minister, August 2015 and World Economic Forum, Global Competitiveness Report 2014-2015
- Mauritius 5th National Report on the Convention for Biological Diversity, 2015 21 United Nations Statistics Division Demographic Yearbook, 2014
- Energy and environment statistics, Statistics Mauritius
- Mauritius 5th National Report on the Convention for Biological Diversity, 2015
- Mauritius SIDS National Report, 2014
- Capacity Development on Coastal Protection and Rehabilitation Final Report, Japan International Cooperation Agency, 2016
- Mauritius National MDG Report, Ministry of Foreign Affairs Regional Integration and International Trade, 2015
- Treebhoohun, The Experience of Mauritius in Economic Transformation, 2015

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Annex 6: UNEG code of conduct form

Evaluators/Consultants:

- 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.
 - 8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
 - 9. Must confirm that they have not been involved in designing, executing or advising on the project being evaluated.

IE Consultant Agreement Form

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

Name of Consultant: Kevin Enongene

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 Ottawa, Canada (Place) on December 1, 2023 (Date)

-

Signature: _

Evaluators/Consultants:

- Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
- 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.
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- 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.
- 8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
- 9. Must confirm that they have not been involved in designing, executing or advising on the project being evaluated.

IE Consultant Agreement Form

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

Name of Consultant: Professor Soonil Dutt Dharam Vir RUGHOOPUTH

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 St Paul, Mauritius (Place) on December 23, 2022 (Date)

Signature:

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Annex 7: Audit trail on comments received on draft IE report and how they have been addressed / not addressed (as a separate file)

Annex 8: Signed Interim Evaluation final report clearance form

to be completed and signed by the Commissioning Unit, RTA and PTA included in the final		
Interim Evaluation Report Reviewed and Cleared By:		
Commissioning Unit (M&E Focal Point)		
Name: <u>Bibi Farzina Lowtun-Boolakee</u>		
Signature: Date: <u>10 - January-2023</u>		
Regional Technical Advisor - Nature, Climate and Energy		
Name: <u>Jana Koperniech</u>		
Signature: Date: 10 January 2023		
Principal Technical Advisor - Nature, Climate and Energy		
Name: <u>Mateo Salomon</u>		
Signature: [clearance online] Date: 11 January 2023		
Annex 9: Phase 1: Progress and Delivery

Key achievements as at date in collaboration with the funding from SADC- Project Preparation and Development Facility (PPDF) on "Development of Guidelines and Standards for RE Projects and a Funding and Incentive Strategy in Mauritius":

Output 1: Mercados Consultancy	STATUS
Report on guidelines, norms and standards and institutional requirements for implementation	Completed The report has been used as a basis for preparation of the regulations on setting of standards and guidelines relating to renewable energy technologies and currently, accreditation mechanisms in respect of operators in the sector of RE
 Report on Institutional Mapping of the Electricity Sector in Mauritius 	Completed This report has been used for elaboration of the process flows with regard to the application for RE certificate as well as background materials for the other consultancies under this project
National Grid Codes	Completed Distribution, Generation, Governance, System Operation and Transmission codes were developed. Grid Codes was reviewed in light with the changes in the amended Electricity Act Proclamation of the Electricity Act Regulations on Electricity, safety, quality and continuity Regulations on Electricity metering, billing and collections

. F п g	Report on nethodology guidelines	Tariff · and ·	Completed These guidelines define the detail aspects, specific formulas and in some cases sources of information which is being used by the URA as a basis for the formulation of the Regulations on Tariff and calculation of Tariff toolkit (to be funded under NAMA project) The report was reviewed in light with the changes in the amended Electricity Act
- <i>4</i> (A Project Evaluation PET)	Tool ·	Completed This tool is being used to evaluate various RE project e.g. projects under the National Scheme for Emerging/Innovative Renewable Energy Technologies (NSEIRET) projects 3 rounds of the NSEIRET schemes have been released and evaluations done using the PET developed 1st Call for Proposal for the National Scheme for Emerging Project Concepts Based on Renewable Energy Technologies (NSEPCRET) released as an upgrade of the NSEIRET project
. F	Report on Green Jobs	•	Completed This report is being used to Facilitate technical trainings to empower RE Workforce and to establish a joint green job framework Findings of the Report is being used to draft the Regulations on Accreditation of Operators Workshop on Green job being planned as soon as social distancing requirements are eased
• F S	Report on Ince Schemes	entive .	Completed Review and acceptance of this report has been quite challenging given the current economic situation and the need not to increase sovereign debt level

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Report on Accreditation of operators	 Completed Findings to be used to trigger discussions with stakeholders on existing gaps and actions to be taken (especially the setting up of JTAs) Findings of the Report is being used to draft the Regulations on Accreditation of Operators Findings of this deliverable together with the Report on Green Jobs have triggered discussion with the British Embassy for support of its scholarship programme for young graduates
Report on Funding Strategy	 Completed Among the various measures, MARENA has started engaging with JICA, DBSA, GCF for support on project implementations MARENA applying to become an accredited entity MARENA contributed substantially in the development of the SDG Investor Map (around RE investment)
 Report on Review and Assessment of the Licensing Framework developed for the Utility Regulatory Authority 	 A benchmarking study on licensing framework was completed URA working on the Regulations on Tariff and Renewable Energy Regulations on Electricity licensing, registration and fees Regulations on Electricity Transitional License

Output 2: Chief Technical Advisor

STATUS

• Capacity needs assessment and review of the existing HR roadmap	 Completed This report has been used for consolidating the PRB report to MARENA's Board aimed at adequately staffing MARENA to allow the successful implementation of the first national RESP for the Republic of Mauritius
• Regulations on Standards for Renewable Energy Technologies.	 Completed These Regulations need to be validated by stakeholders following review by the Attorney General's Office
• Terms of Reference for an Optimal Energy Mix scenarios	 Completed As part of the NDC review and under AFD Facility 2050, scenarios up to 2050 are currently being discussed. MARENA collaborating with UNEP for the Feasibility Study for the development of Offshore Wind in Mauritius MARENA initiating preparation of RFP for feasibility study for the setting up of the legal and regulatory framework for the recycling and disposal of used solar photovoltaic panels (as per budget measure - Budget Speech 2022/23)
• Terms of Reference for Life Cycle Assessment	 Completed The TOR for an Integrated Life-Cycle Assessments of the following RETs: Solar PV; Onshore Wind; Offshore Wind; Wave; Bioenergy; Municipal Waste to Energy

 Reports under review by the CTA: National Grid Codes Report on Tariff Guidelines and Methodologies Consultanc y services to undertake an Electricity Tariff Cost of Service Study Proposed Electricity Regulation 	 Completed (Report on harmonization of the national standards on municipal wastes to energy with the proposed standards not prepared due to lack of data/ information)
for the URA	
· Reports on:	· Completed
- Operational Framework for MARENA	• Reports used for developing the RE Portal of MARENA and preparing the RE Roadmap
- Institutional Processes and on grid / off grid policies	

Output 3: Energy Economist	STATUS	
• A report on socio-economic analyses of each of the traditional energy sources and RE technologies.		Completed This report has been prepared to analyse the impact of implementation of energy systems and is being used by MARENA to prepare the updated RE Roadmap

Levelized Cost of Electricity / Storage	•	Completed This tool is being used to evaluate various RE project under the various MARENA schemes Report used to prepare the updated RE Roadmap
M&E Framework		Completed MARENA in the process of capturing indicators for evaluation of the RESP
Budget/Costing plan for activities and sub-activities of the RE 5-year strategic plan of MARENA		Completed MARENA using the findings of the Report to prepare projects for international funding Report used to develop concept notes for various calls for proposals and budget opportunities
Appraisal of technical proposals received	•	Completed 2 projects were retained following this review exercise and currently undergoing implementation

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 Feasibility study on the potential of floating solar PV in Mauritius, with focus on the Tamarind Completed The Report has been approved by the MARENA Board and has been communicated to the CEB to look into the possibility of 	Output 4: Floating Solar PV	STATUS	
 Falls reservoir installing a 2 MW floating solar PV plant on the Tamarind Falls reservoir An RFP for Consultancy services for the Setting up of a 2 MWp floating PV plant at Tamarind Falls Reservoir was released by the CEB for the EIA and all related technical studies Consultancy firm has been hired and the tender for the implementation of a floating solar was launched in Nov 2022 and will be closed in Feb 2023. 	 Feasibility study on the potential of floating solar PV in Mauritius, with focus on the Tamarind Falls reservoir 		Completed The Report has been approved by the MARENA Board and has been communicated to the CEB to look into the possibility of installing a 2 MW floating solar PV plant on the Tamarind Falls reservoir An RFP for Consultancy services for the Setting up of a 2 MWp floating PV plant at Tamarind Falls Reservoir was released by the CEB for the EIA and all related technical studies. Consultancy firm has been hired and the tender for the implementation of a floating solar was launched in Nov 2022 and will be closed in Feb 2023.

Output 5: Management Information STATUS System

(MARENA/ URA)	
• A Management Information Systems (MIS) was implemented at the MARENA and the Utility Regulatory Authority (URA)	 Completed Through the MIS, the MARENA and URA have been able to automate its financial system The URA now has an up-to-date website including a webbased application for its online licensing system seamlessly integrated with its financial system Through an MOU between URA and the Ministry of Environment (under the NAMA project), updates on the MIS has been carried out in light with the changes in the Electricity Act

Output 6: Branding of MARENA	STATUS	
• Branding		Procurement of marketing collaterals completed Photographer/ videographer appointed for preparing high quality pictures and videos

· Awareness / Training	•	Completed
	·	A total of 22 awareness sessions on renewable energy were led by MARENA between 2019 and 2020 reaching above 1,500 women at community level.
		CEB taking over the awareness raising activities together with application forms for potential beneficiaries of PV panels under the various schemes.
		192 participants (beneficiaries of NEF, members of Social Welfare centres and members of the National Women Council) have so far benefitted from the training on 'Women Entrepreneurship and Basics of PV' delivered by the MITD.
		MARENA staff successfully completed online courses on; 1) Electrics for Renewables, 2) Wave and Hydro Power, 3) Biomass, 4) Project Management for renewable energy projects.
	·	RDO (Economist) has joined MARENA since June 2021 and is undertaking the remaining courses.
		Leadership training for CEO and Chairperson completed
		Training on Purchase Power Agreement from Infocus International by representatives of MARENA, URA, MEPU and CEB completed
		Conducted national dialogue on RE following COP 26
		Completion of Rounds 1-2 of MARENA's scholarship scheme supported by UNDP, Rounds 3 & 4 funded solely by MARENA

Annex 10: DBM Letter



Keep growing

Our Ref: MD/GCF/22/01

@ 3 AUG 2022

03 August 2022

Ms. Amanda K. Serumaga Resident Representative UNDP Mauritius/Seychelles 6th Floor, Anglo Mauritius House Intendance Street P.O Box 253 Port Louis Mauritius and The Green Climate Fund "GCF"

Madam

Re: Co-financing commitment letter for the GCF-funded 'Accelerating the transformation shift to a low carbon economy in the Republic of Mauritius' project in Republic of Mauritius (FP033)

I am writing to you to express our commitment to support the **GCF-funded project titled** 'Accelerating the transformation shift to a low carbon economy in the Republic of Mauritius' project in Republic of Mauritius (FP033) implemented by United Nations Development Programme, together with the Government of Mauritius, Central Electricity Board and other national stakeholders.

This is to confirm the availability of co-financing on behalf of the Development Bank of Mauritius (DBM) for the phase II of the project, in form of a concessional loan facility for domestic customers (households in the context of the UNDP-GCF project) for investing into a rooftop solar PV installation up to a total of MUR 250,000 per applicant and at a 2% rate of interest. A total value of MUR 600Million (est. USD 13.1Million) is available under this loan facility and can be used by the beneficiaries of the UNDP-GCF project. The loan facility is available for the years 2022 – 2023 and can be extended.

Furthermore, in order to help customers with low income, we may have a blended mix whereby the UNDP could subsidize the cost for household with income below the threshold of MUR 50,000 thus reducing the rate of 2% further down.

Sincerely yours,

au

J Pandoo Managing Director

DEVELOPMENT BANK OF MAURITIUS LTD. CHAUSSÉE, PORT LOUIS, MAURITIUS.	T (230) 203 3600 F (230) 208 8498	E dbm@intnet.mu W http//www.dbm.mu	BRN C07007064
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Annex 11: CEB Letter



ALL CORRESPONDENCE TO BE ADDRESSED TO THE GENERAL MANAGER

Electricity Board Central

TEL No. E-MAIL WEBSITE VAT Reg. No. BRN

:(230) 404 2000 TELEFAX No. :(230) 454 7630 / 7632 :ceb@intnet.mu :ceb.mu :VAT22000591 F07000041

RE\SBP\2022\49

CORPORATE OFFICE P.O. BOX 134 Rue du Savoir Cybercity, Ebène 72201 MAURITIUS

OUR REF:

YOUR REF:

04 August 2022

Ms Amanda Serumaga, The UNDP Resident Representative for Mauritius and Seychelles **UNDP Mauritius Country Office** 5th Floor, Anglo Mauritius House, Intendance Street. Port Louis

Fax No: (230) 208 4871

Dear Madam,

Re: CEB co-financing commitment letter for the GCF-funded 'Accelerating the transformation shift to a low carbon economy in the Republic of Mauritius' project in Republic of Mauritius (FP033) - Phase II

In the meeting we had with the UNDP Regional Technical Advisor, Ms. Jana Kopernierch, on 20 July 2022, we were requested to confirm the CEB's co-financing in the implementation of the Phase II of the GCF project.

In this regard and pursuant to our earlier correspondences dated 07 Dec 2021 and 10 Jan 2022, we are hereby reaffirming CEB's co-financing in the deployment of the 25 MW solar photovoltaic deployment, under the GCF project, as follows: -

- 1. MUR 163 M (USD 3.62 M) in the Home Solar Project (Phase II & partly Phase III) for the low-energy usage households;
- 2. MUR 219 M (USD 4.87 M) in the SSDG Net-Billing Scheme for middle-energy usage households; and
- 3. MUR 263 M (USD 5.84 M) in the NGOs Category which will include Religious Bodies & Charitable Institutions.

More details on the co-financing structure are provided in the table below.

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Solar PV Deployment (GCF Phase II) Financing Structure Proposal					Source of Finance, Amount (MUR m) & Shares	
SSDG (MSDG) Project/Scheme	Number of Installations Targeted	Capacity of a PV kit (kW)	Total Capacity (kW)	Estimate d Cost (MUR m)	CEB (loan and/or equity)	GCF Grant
Home Solar Project (Phase II & partly Phase III) (low- energy usage households)	3300	1.5	4950	223	163 73%	60 27%
SSDG Net-Billing (middle-energy usage households)	2500	2.0	5000	300	219 73%	81 27%
NGOs Category which includes Religious Bodies & Charitable Institutions	1500 - 3000	2.0 - 4.0	6000	360	263 73%	97 27%
· ·	Fotal		15950	883	645	238

We seize this opportunity to seek the guidance of office for expediting the implementation of the Phase II of the GCF project.

We seize this opportunity to seek the guidance of office for expediting the implementation of the Phase II of the GCF project.

Yours faithfully,

Chavan DABEEDIN Renewable Energy & Strategic Projects Manager - GCF Project Director

Copy:

The Permanent Secretary, Ministry of Energy and Public Utilities, Fax: (230) 213 2543